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TEPE YAHYA, TELL ABRAQ AND THE CHRONOLOGY OF THE BAMPUR SEQUENCE

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Introduction

Seventy years ago Sir Aurel Stein conducted the first excavations at Bampur in Iranian Baluchistan. From 27 February to 2 March, 1932, Stein excavated a narrow slit trench, '75 feet long and 4 feet wide' (Stein 1937: 106), to which were appended several extensions, labelled B and C. As he wrote in the introduction to his account of the excavations, 'The variety of the ceramic types to be picked up on the surface indicated prolonged occupation, reaching down to comparatively late times. But some fragments of fine greyish ware painted with animal figures clearly suggested some prehistoric deposits lower down' (Stein 1937: 106). Stein's trench indeed brought to light numerous pieces of fine black-on-greyware, although this has received little attention in chronological surveys of Iran and the Indo-Iranian borderlands (e.g. McCown 1942, 1954; Piggott 1950; Fairservis 1961; Dyson 1965), no doubt due to the much more detailed stratigraphy recovered in 1966 at Bampur by Beatrice de Cardi (de Cardi 1970). In a 2 x 6 m. trench at a point called Site Z, de Cardi recorded a stratigraphic sequence which she divided into 'at least six periods of occupation, ranging from about the middle of the third millennium to ca. 1900 B.C.' (de Cardi 1970: 243). These six periods — I (the earliest), II, III.1-4, IV.1-3, V.1-2, and VI — were broadly grouped as I-IV, contemporary with the later pehistoric occupation of Kili Ghul Muhammad II-IV and Damb Sadaat I-III, and V-VI, contemporary with the later material at Kulli and Mehi, Amri III-IV, Chanhu-Daro II-III, Lothal, and most importantly for our purposes, the occupations on Umm an-Nar island in Abu Dhabi (United Arab Emirates) and the 'Barbar' culture of Bahrain (de Cardi 1970: Table 2).

Shortly after the appearance of the first preliminary report on de Cardi's work at Bampur (de Cardi 1968), M. Tosi suggested, on the basis

of parallels to Shahr-i Sokhta and sites in the Persian Gulf (Qalat al-Bahrain, Barbar), that Bampur I-IV could be dated to c. 2400-2100 B.C., and Bampur V-VI to 2100-1800 B.C. (Tosi 1970). This proposal, which differed only slightly from de Cardi's own, was completely rejected three years later, however, in favour of a far more radical one. In an article co-authored with C.C. Lamberg-Karlovsky (Lamberg-Karlovsky and Tosi 1973: Chart 4), the following synchronisms were proposed:

Bampur IV = Namazga III = Uruk IVb
Bampur V = Namazga IV = late Jamdat Nasr/early Early Dynastic
Bampur VI = Early Dynastic/pre-Old Akkadian = Umm an-Nar Culture

In the same year R.H. Meadow affirmed this proposal, noting the existence of parallels to Bampur I-II in period VA at Tepe Yahya; to Bampur II-III in Tepe Yahya IVC; and to Bampur IV-V.1 in Tepe Yahya IVB. These suggested 'a starting date during the middle of the fourth millennium for the Bampur sequence. This contrasts markedly with the second quarter of the third millennium date suggested by de Cardi' (Meadow 1973: 195-196)[1]. In absolute terms Meadow suggested that Bampur I began c. 3400 B.C. and Bampur VI ended c. 2300 B.C. (Meadow 1973: Fig. 1). Similar views were later expressed by Lamberg-Karlovsky and Schmandt-Besserat in their discussion of the Bampur, Khurab and Chah Husseini material in the Peabody Museum, noting synchronisms between Bampur II-III and Tepe Yahya IVC (Bampur I was discounted because of a paucity of material) and Bampur IV-VI and Tepe Yahya IVB (Lamberg-Karlovsky and Schmandt-Besserat 1977: 133).

Although no real substantive work was done on this problem during the late 1970's and early 1980's, Voigt and Dyson effectively reverted to de Cardi's chronology in their contribution to the third edition of *Chronologies in Old World Archaeology* (Voigt and Dyson 1992: 151-152)[2], while J.G. Shaffer suggested that parallels adduced by Lamberg-Karlovsky

[1] Note that de Cardi 1970: 237 says that 'the six periods of occupation extended from about the second quarter of the third millennium to *ca.* 1900 B.C.', but on p. 243, as noted above, she wrote, 'from about the middle of the third millennium to *ca.* 1900 B.C.'

[2] Although published in 1992, the text of their contribution was actually finalized in 1986.

(Lamberg-Karlovsky 1970) and Tosi (Tosi 1970) between Shahr-i Sokhta II-III and Bampur I-IV, and Shahr-i Sokhta IV and Bampur V-VI, 'would date the Bampur Phase', as he termed the entire occupation of the site, 'between ca. 2800-2200 B.C.' (Shaffer 1992: 457).

The apparent dilemma in deciding whether to date the Bampur sequence as de Cardi did, from c. 2500-1900 B.C., or as Lamberg-Karlovsky, Tosi, Meadow and Schmandt-Besserat did, to c. 3400-2300 B.C., was a direct result of the evidence emerging from Tepe Yahya in the late 1960's and early 1970's. Shaffer's proposal, on the other hand, was based mainly on parallels with Shahr-i Sokhta, and represented something of a compromise between these two radical positions, lowering the start date favoured by the Yahya group to 2800 B.C. and raising the end date favoured by de Cardi to 2200 B.C.

In fact, with the publication of the final reports on Tepe Yahya periods V (Beale 1986), IVC and IVB (Potts 2001), the dating of the Bampur sequence should be reconsidered. Moreover, Bampur-type black-on-grey ceramics from a well-dated, late 3rd millennium tomb at Tell Abraq (Potts 2000: 123 and below) provide yet another chronological fixed point. The availability of this data, lacking when debate over the chronology of Bampur was at its height, prompts me to return to the subject here in the hope that certain problems can be solved and impressions dispelled to which relatively little attention has been paid in recent years.

The evidence from Tepe Yahya

The dating of Bampur as prompted by the Tepe Yahya excavations underwent two major revisions. In the 1970 progress report on the Tepe Yahya excavations (Lamberg-Karlovsky 1970: 84, Chart I) a synchronism was suggested between Bampur I-IV and Tepe Yahya IVC, the 'Proto-Elamite' occupation broadly contemporary with the Jamdat Nasr period in Mesopotamia and Susa C (i.e. Acropole I, level 16 [Susa III: 16]). At the time Lamberg-Karlovsky wrote of the IVC building, where Susa III-type tablets[3] were found, as follows: 'Ceramics in this building can be readily paralleled at Bampur I-IV… It becomes clear that an earlier dating for

[3] I prefer to call these tablets 'Susa III-type' rather than Proto-Elamite because we still do not know whether the language conveyed by the writing on them is in fact related to later Elamite. See Potts 1999: 74.

Bampur…is forthcoming' (Lamberg-Karlovsky 1970: 81). In 1972, however, when Meadow compiled his chronological chart of the Indo-Iranian borderlands[4], the dates of the Bampur periods were revised even further upward. Citing the existence in period VA of 'black-on-cream or red slipped wares similar in many respects to those found at Bampur, Periods I-II', Meadow noted the presence of 'Bampur II/III-like sherds - black geometric designs on red, buff, or reduced grey' in IVC contexts (Meadow 1973: 194-195). The result, as shown above, was to begin the Bampur sequence around 3400 B.C., contemporary with the Late Uruk period in southern Mesopotamia.

Let us begin with the evidence from period VA at Tepe Yahya. This period has been dated to 3600-3300 B.C. by Beale (Beale 1986: 11). Yet in the final report on the early periods at Tepe Yahya the only reference to Bampur occurs in connection with 'a total sample of less than 30 sherds' of black-on-fine orange ware from VB and VA contexts (Beale 1986: 85). On the basis of parallels to sherds from IVC and IVB levels, showing 'close parallels with third millennium painted wares at Bampur', Beale noted the possibility that the few examples from VB and VA might have been 'intrusive from later periods' (Beale 1986: 89). I came to exactly the same conclusion with respect to several sherds of black-on-orange pottery from the IVC building in my own publication of the material from periods IVC and IVB at Tepe Yahya, where I wrote, 'Their similarity to the later painted pottery of Bampur…is obvious', concluding 'it seems difficult to avoid the conclusion that these are intrusive from late-third-millennium contexts, where black-on-orange ware with decoration of this sort was most abundant' (Potts 2001: 7).

While I believe we can dismiss the phantom links between periods VA or VB at Tepe Yahya and Bampur, I think there can be no doubt that the black-on-grey tradition began at this time. At Miri Qalat in period II (Miri period) black-on-grey beakers and bowls were found in association with beakers with chevron decoration beneath the rim and 'potter's marks' on the base' which, as the excavator immediately recognised, are precisely like those from periods VA and VB at Tepe Yahya (Besenval 1997: 205, Figs. 4-6). These, as well as other parallels to Tal-i Iblis, Chah Hussaini, Tal-i Bakun A and Susa I have led Besenval to date the Miri period from

[4] Although Meadow's article was not published until 1973, his chart bears the date '7/72'.

the late 5th to the mid-4th millennium B.C. (Besenval 1997: 205) and it is clear that black-on-grey ware was being produced at this time[5].

Tepe Yahya has at least one black-on-grey bowl fragment (Fig. 1, left) comparable to a piece from Miri Qalat II. The Yahya exemplar comes from a IVC1 context which, unlike IVC2 — the primary deposit in the IVC building — is a deposit of secondary or tertiary fill from within and outside the building itself. In the recently published report on the third millennium levels at Tepe Yahya, I have shown how mixed the IVC1 material is. In fact, if the parallel drawn with Miri Qalat II is correct, then the piece illustrated in Fig. 1 may represent a period VB or VA sherd which is out of place. Against this notion is the absence of comparable pieces from good VB and VA contexts, and consequently the absence of comparanda in Beale's volume on the early periods at Tepe Yahya, but the alternative, that Miri Qalat II lasted into the late 4th or even very early 3rd millennium B.C., seems even less likely, for by this time, according to the chronology established by Besenval, the Miri Qalat IIIB period had already begun.

While the VB and VA levels failed to produce any pieces which can be paralleled at Miri Qalat in period II, there is an interesting parallel between a black-on-buff rim fragment with interior painted decoration from a VB or VA.2 context and a black-on-grey rim from Miri Qalat II (Figs. 2). This suggests to me that the black-on-grey tradition grew out of a much broader painted pottery tradition which flourished during the early 4th millennium, and included black-on-buff as well as black-on-red pottery. In this regard it is interesting to note that Besenval describes the relevant material from Miri Qalat II as 'Black-on-Red/Greyish Ware' (Besenval 1997: 202). Obviously we are dealing with a ware which, in order to make it appear grey, was fired in a reducing atmosphere. The fact that the result was not always true grey, but sometimes red, suggests that a relationship to black-on-buff and black-on-red painted pottery, of the sort found at Tepe Yahya in periods VB and VA, could well provide the context for the appearance of true black-on-grey ware.

A number of sherds, two from IVC1 and one from a IVC2 context (Fig. 3), come from beakers of the sort found at Miri Qalat in period IIIB. One

[5] Whether black-on-grey ware originated in this period is another matter. At Miri Qalat, the preceding period I deposits were only reached in part of Trench III and little can be said about them. It is possible, however, that black-on-greyware was produced in period I, but further work is necessary before this can be ascertained.

in particular (bottom of Fig. 3) is very similar to a piece from Miri Qalat, while the other two are generally similar. In fact, these latter pieces are also reminiscent of two black-on-red beaker fragments from period VA at Tepe Yahya. Another bowl fragment from a IVC1 context at Tepe Yahya also resembles a black-on-buff bowl of VA date (Fig. 4), as well as several surface sherds from Takkul and Nazirabad picked up by Stein (Fig. 4).

The last piece from a IVC2 context which is presented here (Fig. 5) is the base of a deep bowl. It is decorated with meandering lines which emanate roughly from the interior centre point of the vessel. Comparable pieces are known from Stein's work in the cemetery at Shah-i Tump (Fig. 3, upper right), and Besenval's work has shown that this material is contemporary with Miri Qalat IIIB. Thus, it is essentially contemporary with Tepe Yahya period IVC. Other comparable examples are known from Khurab, Damin and various phases (I-IV, II, and IV/1) at Bampur. The decoration on the piece from Tepe Yahya most closely resembles the fragment excavated by Stein at Damin, and the more orderly spiral of the Shah-i Tump vessels is less similar. One might suggest that these pre-date the rest of the examples shown in Fig. 5, and that the Bampur II and I-IV, and Khurab examples shown there, all of which show a characteristic pattern of three parallel, meandering lines emanating in a bunch from the centre of each vessel, should be considered contemporary. Perhaps the Yahya IVC2 and Damin pieces fall somewhere in between? At any rate, the bases with such decoration are by no means common at Bampur and the affinity which they show to the piece from Yahya IVC2 does not, in my opinion, validate the hypothesis that the start of the Bampur sequence was coeval with the beginning of period IVC at Tepe Yahya, i.e. c. 3100 B.C. Indeed, the very close parallel between a bowl fragment from a IVB6 context (the earliest phase of IVB, dating to c. 2200 B.C. on the basis of ceramic and other parallels [Potts 2001: 201]) and a Bampur II piece (Fig. 6), suggests that we should instead be thinking of a date, as de Cardi originally suggested, in the second half of the 3rd millennium B.C.

The evidence from Tell Abraq

New evidence from Tell Abraq in the United Arab Emirates supports a date for the end of the Bampur chronology well after the Early Dynastic/pre-Old Akkadian horizon suggested by Lamberg-Karlovsky or the absolute date of c. 2300 suggested by Meadow. In 1998, excavations in the

late Umm an-Nar-type tomb at Tell Abraq recovered three black-on-grey vessels. These are as follows:

- a miniature, carinated jar - TA 2020 (75.61 E/ 114.98 N, elev. 7.60, base of layer 3; discovered 7 January 1998; rim dia. - 4.81 cm., base dia. - 3.525 cm., height - 6.46 cm. (Figs. 7-8)
- a squat, carinated, straight-sided canister - TA 2209 (74.70 E/ 116.95 N, elev. 7.51-7.61 m., layer 3; discovered 18 January 1998; rim dia - 8.04 cm., base dia.10.134 cm., height 10.22 cm. (Figs. 9-10)
- a tall, TA 2833 (75.75 E/ 115.30 N, elev. 7.58-7.70 m., layer 4; discovered 1 February 1998; rim diam - 10.12 cm., base diam - 7.99 cm., height - 13.5 cm. (Figs. 11-12)

Of these vessels there can be no doubt that TA 2209 is the most important in the present context. The shape is very similar to that of another complete vessel from Grave V on Umm an-Nar (Fig. 13 and Frifelt 1991: Fig. 176). Moreover, both vessels show a similar usage of horizontal, isosceles triangles near the base and along the shoulder, as well as four vertical strokes on the interior of the rim. Although taller and marked by a more pronounced carination, a vessel from the great tomb at Hili (tomb 1059) shows a similar usage of both the horizontal, isosceles triangle, and the stylized palm tree, albeit with two rather than three fronds (Fig. 13 and Bibby 1966: Fig. 11).

But it is the many parallels with Bampur which are of greatest significance. The isosceles triangle on the shoulder and near the base can be paralleled at Bampur in periods IV/1, V/1 and V/2 (Fig. 14). Admittedly it occurs there on open bowls as well as on body sherds which come from vessels of indeterminate shape. The same use of this motif appears on material recovered by Stein at Bampur, Katukan and Khurab.

The internally hatched M-shape (Fig. 15) appears early in the Bampur sequence, appearing on sherds assigned to Bampur I-IV and II, as well as on pieces, again of variable shape, from periods V/1 and V/2. Similarly, it can be found on material which Stein excavated at both Bampur and Khurab.

Finally, the stylized palm tree, with two or, as in our case, three fronds, appears on a sizable number of Bampur sherds (Fig. 16). With the exception of one piece from period I and another from period VI, the majority come from Bampur IV/1 and 3 and Bampur V/1 and 2. In addition, the

stylized palm can be found on pieces which Stein excavated at Bampur, Maula and Khurab (Fig. 17).

The significance of the Tell Abraq finds resides not merely in the connections which they evince between southeastern Arabia and Baluchistan, for these, after all, have been acknowledged since the discovery of black-on-grey pottery at Umm an-Nar over forty years ago. Rather, it is the date of the Tell Abraq material which is of greatest importance in the present context. A series of five very tightly clustered AMS dates (Table 1) from charcoal found within the tomb were so close that, when subjected to a chi-squared test,'they turn out to be statistically identical at the 95% confidence level. This being the case, it was possible to calculate a pooled average which yielded a raw figure of 3738 ± 26 before present (B.P.). When calibrated at the 1 sigma confidence level, this provided the following contributions to probabilities: 2188-2161 B.C. (.29), 2145-2126 B.C. (.23), and 2081-2044 B.C. (.48), while at the 2 sigma confidence interval we get a date of 2197-2036 B.C. (1.0)' (Potts and Weeks 1999: 10).

The very strong possibility that the black-on-grey ware from Tell Abraq dates to the 22nd or 21st century B.C., and the very clear parallels, predominantly though not exclusively with periods IV-IV at Bampur, strongly suggest that those periods do not date, as sometimes argued, to the first half of the 3rd millennium B.C. Rather, bearing in mind that parallels between Tell Abraq and Bampur VI are scarcer than those with material from Bampur IV-V, de Cardi's original chronology, in which period VI ended around 1900 B.C., now seems highly plausible, making it all the more likely that Periods IV-V, which show such clear links to the Tell Abraq tomb, dates to the late 3rd millennium.

It is not relevant, at this point, to discuss the internal chronology of the late 3rd millennium (Umm an-Nar period) in the Oman peninsula, but clearly the C14 dates from the tomb at Tell Abraq and Asimah (Görsdorf and Vogt 2001) situate these sites at the bottom (late) end of the period, whereas the Early Dynastic II/III-type storage jars from the Umm an-Nar island settlement (Frifelt 1995: 123ff) and graves (Frifelt 1991: 96), fall at the top (early) end of the period. Both sites have yielded black-on-grey pottery (as have others in the region) of Iranian/Baluchistani origin, as demonstrated by physico-chemical analyses (e.g. Méry 2000: 191-204), not all of which can be compared with the types discussed here. This suggests, therefore, that the chronological range of black-on-grey ware observed in de Cardi's soundings at Bampur can be calibrated, to a certain

extent, by the occurrences of similar material at sites in the Oman peninsula which have a C14 chronology unavailable for Bampur. Until such time as new work can be undertaken at Bampur — an undeniably important site within its regional context — the finds from related sites, such as Tell Abraq and Tepe Yahya, will remain important in refining the Bampur chronology. In the present article I have tried to make use of this material by clarifying the precise nature of the most easily paralleled black-on-grey pottery from the IVC and early IVB contexts at Tepe Yahya (several others for which no clear parallels could be found are illustrated in Fig. 18), and by highlighting the very important parallels which can now be drawn with Miri Qalat in Pakistani Baluchistan. Tell Abraq, although situated on the opposite side of the Straits of Hormuz, provides some of the best evidence to date for the chronology of periods IV and V at Bampur, suggesting that, in the main, de Cardi's original chronological framework was correct.

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Sample	*Level and elevation*	*C14 age BP*[1]	*Calibrated age BC (1 sigma)*[2]	*Calibrated age BC (2 sigma)*
OZD686	3 (7.40-7.50 m.)	3677 ± 58	2140-2070 (.41)[3] 2070-1970 (.59)	2200-1890 (1.0)
OZD687	4 (7.60-7.70 m.)	3826 ± 57	2400-2390 (.05) 2340-2190 (.87) 2160-2140 (.08)	2460-2130 (.98) 2070-2050 (.02)
OZD688	6 (7.80-7.90 m.)	3742 ± 50	2200-2100 (.64) 2090-2040 (.36)	2290-1980 (1.0)
OZD689	6 (7.80-7.90 m.)	3650 ± 70	2130-2080 (.25) 2050-1920 (.75)	2190-1870 (.96) 1840-1780 (.04)
OZD690	6 (7.87 m.)	3779 ± 61	2290-2130 (.86) 2080-2050 (.14)	2450-2440 (.01) 2400-2030 (.98) 2000-1980 (.01)

[1] Dates were run at the Australian Nuclear Science and Technology AMS facility at Lucas Heights, NSW, Australia under grant 98/152R from the Australian Institute of Nuclear Science and Engineering. My thanks to colleagues there, especially Claudio Tuniz and Ewan Lawson, for their help.

[2] My thanks to Dr. Loyd Weeks (Peabody Museum, Harvard University) for calibrating these dates using CALIB 3.0.3c.

[3] This is the contribution to probabilities.

Tepe Yahya IVC1 (Potts 2001: Fig. 2.25.K)

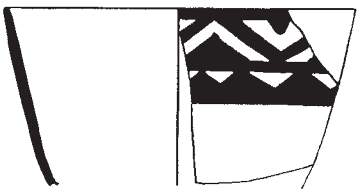
Miri Qalat II (Besenval 1997 Fig. 5)

Fig. 1

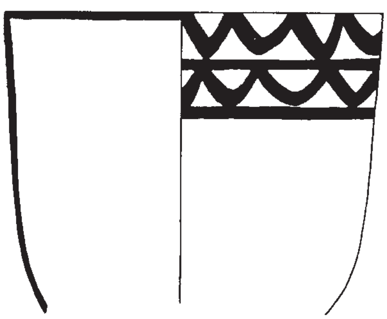
Beale 1986: Fig. 4.24.n,
black-on-buff, VB-VA.2

Miri Qalat II, Besenval 1997:
Fig 4 right

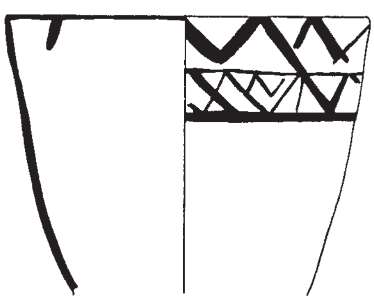
Fig. 2



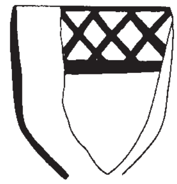
Tepe Yahya IVC2 (Potts 2001: Fig. 1.18.B)



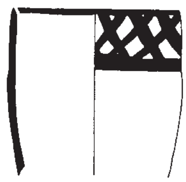
Tepe Yahya IVC1 (Potts 2001: Fig. 2.2.G)



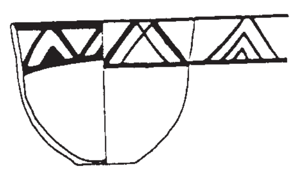
Tepe Yahya IVC1 (Potts 2001: Fig. 2.22.H)



Beale 1986: Fig. 4.30.g, black-on-red, VA.2-VA.1



Beale 1986: Fig. 4.30.e, black-on-red, VA.2-VA.1

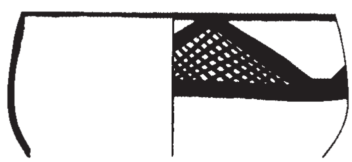


Miri Qalat IIIB (Besenval 1997: Fig. 16)

Fig. 3

Beale 1986: Fig. 4.39.e, black-on-smooth buff, VA.2-VA.1

Takkul (Stein 1937: Pl. XX,Takkul A.8)



Tepe Yahya IVC1 (Potts 2001: Fig. 2.23.C)

Nazirabad (Stein 1931: Pl. X. Naz. 6)

Fig. 4

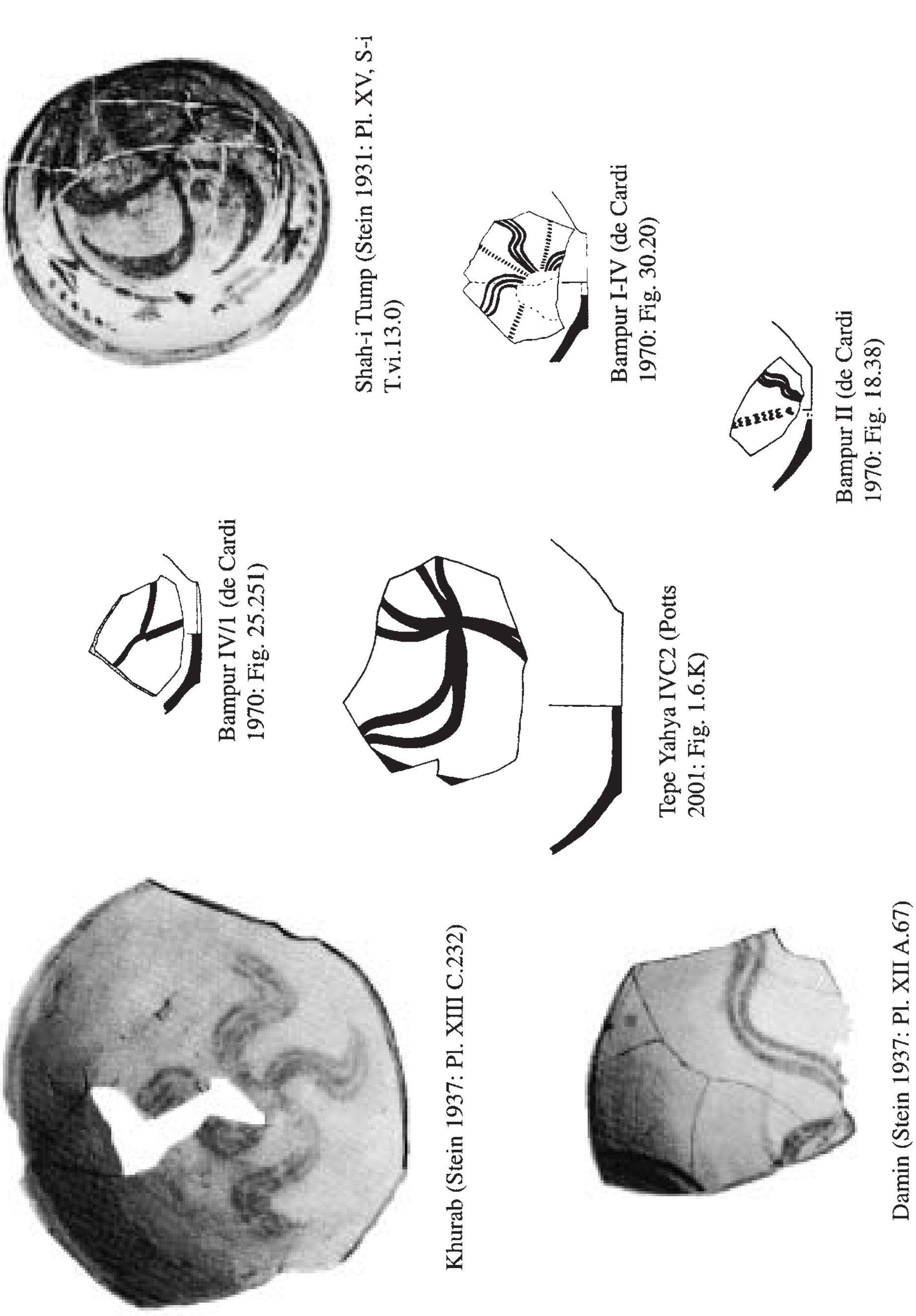
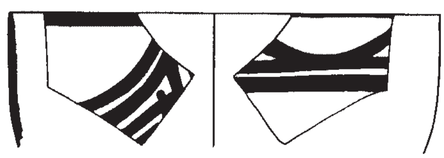
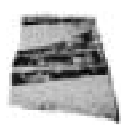

Shah-i Tump (Stein 1931: Pl. XV, S-i T.vi.13.0)
Bampur I-IV (de Cardi 1970: Fig. 30.20)
Bampur II (de Cardi 1970: Fig. 18.38)
Bampur IV/1 (de Cardi 1970: Fig. 25.251)
Tepe Yahya IVC2 (Potts 2001: Fig. 1.6.K)
Khurab (Stein 1937: Pl. XIII C.232)
Damin (Stein 1937: Pl. XII A.67)

Fig. 5

Bampur II (de Cardi
1970: Fig. 21.107)



Tepe Yahya IVB6 (Potts
2001: Fig. 3.22.A)



Nazirabad (Stein
1931: Pl. X. Naz. 42)

Fig. 6

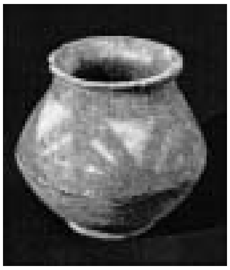


Fig. 7

Fig. 9

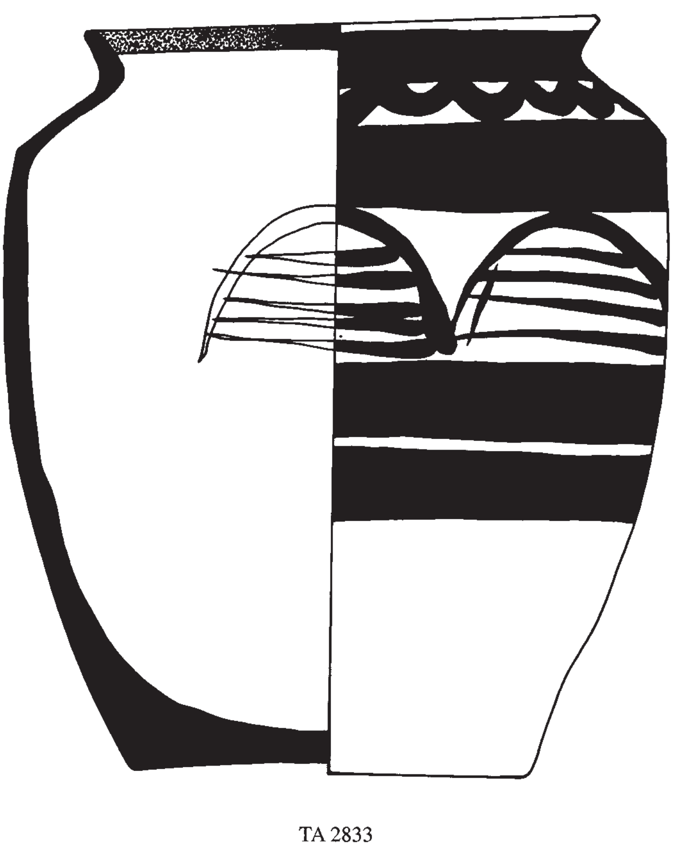
TA 2020

Fig. 8

TA 2209

Fig. 10

Fig. 11



TA 2833

Fig. 12

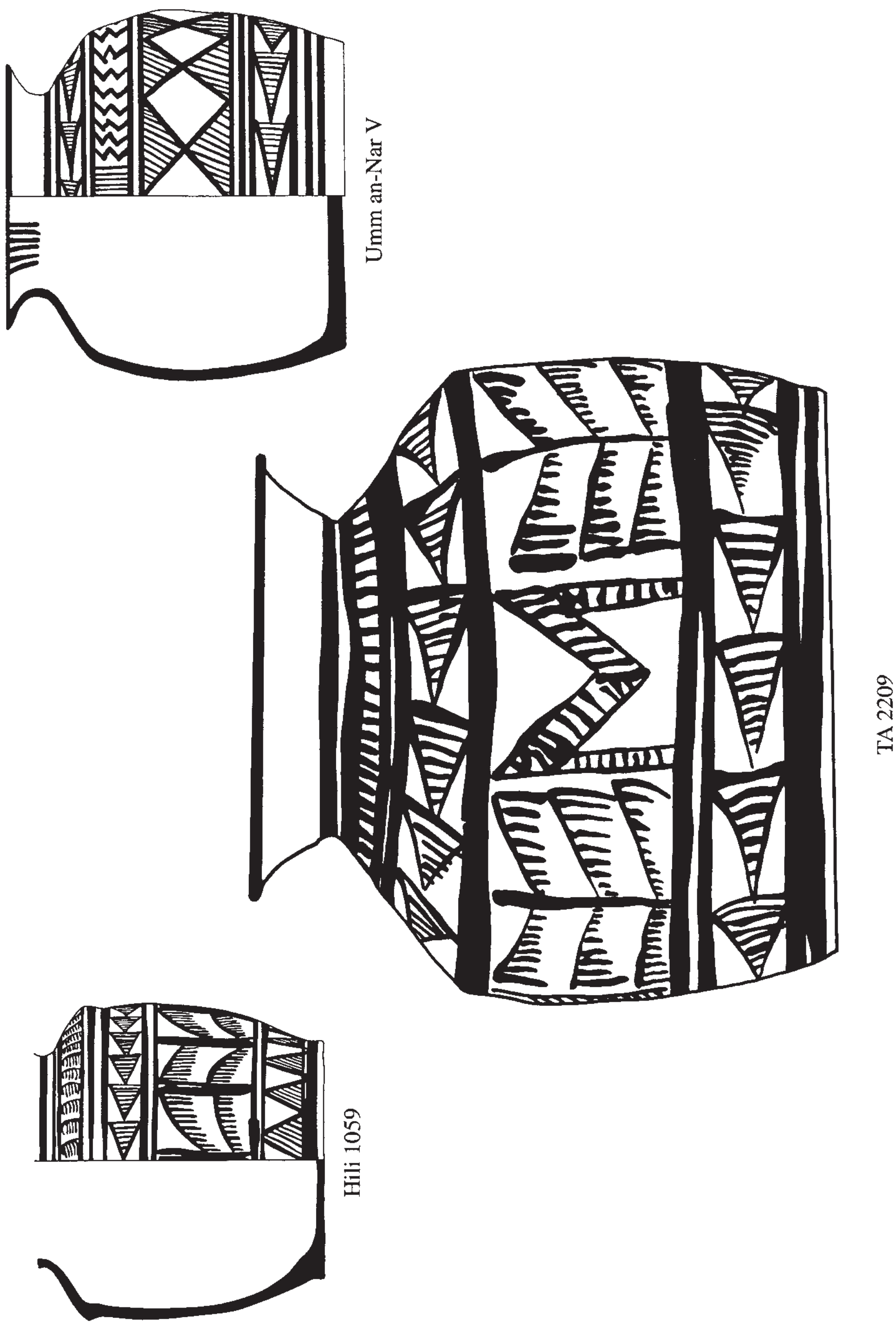


Fig. 13

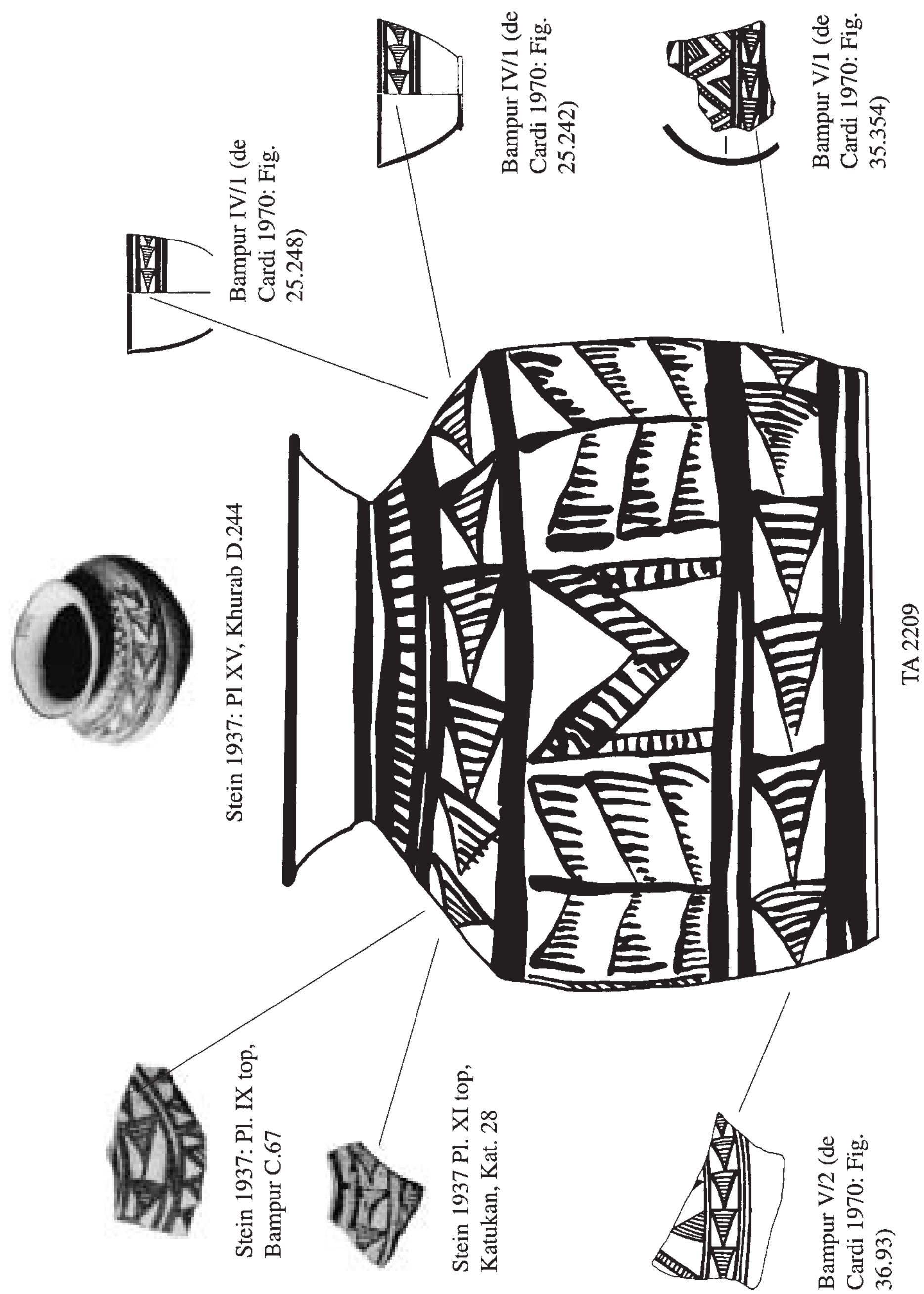

Stein 1937: Pl XV, Khurab D.244
Bampur IV/1 (de Cardi 1970: Fig. 25.248)
Bampur IV/1 (de Cardi 1970: Fig. 25.242)
Bampur V/1 (de Cardi 1970: Fig. 35.354)
Stein 1937: Pl. IX top, Bampur C.67
Stein 1937 Pl. XI top, Katukan, Kat. 28
Bampur V/2 (de Cardi 1970: Fig. 36.93)
TA 2209

Fig. 14

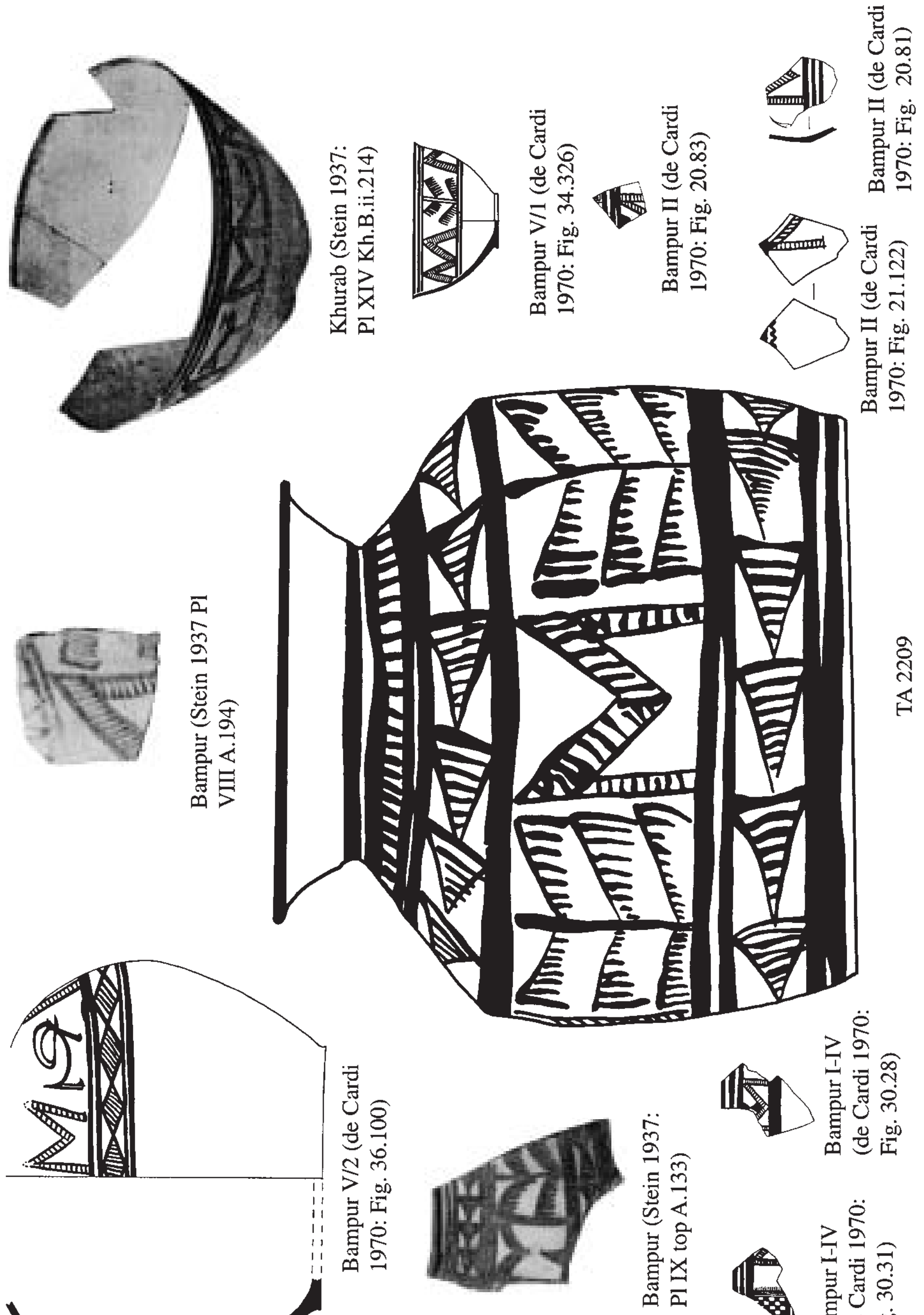

Bampur V/2 (de Cardi 1970: Fig. 36.100)
Bampur (Stein 1937: Pl IX top A.133)
Bampur I-IV (de Cardi 1970: Fig. 30.31)
Bampur I-IV (de Cardi 1970: Fig. 30.28)
Bampur (Stein 1937 Pl VIII A.194)
TA 2209
Khurab (Stein 1937: Pl XIV Kh.B.ii.214)
Bampur V/1 (de Cardi 1970: Fig. 34.326)
Bampur II (de Cardi 1970: Fig. 20.83)
Bampur II (de Cardi 1970: Fig. 21.122)
Bampur II (de Cardi 1970: Fig. 20.81)

Fig. 15

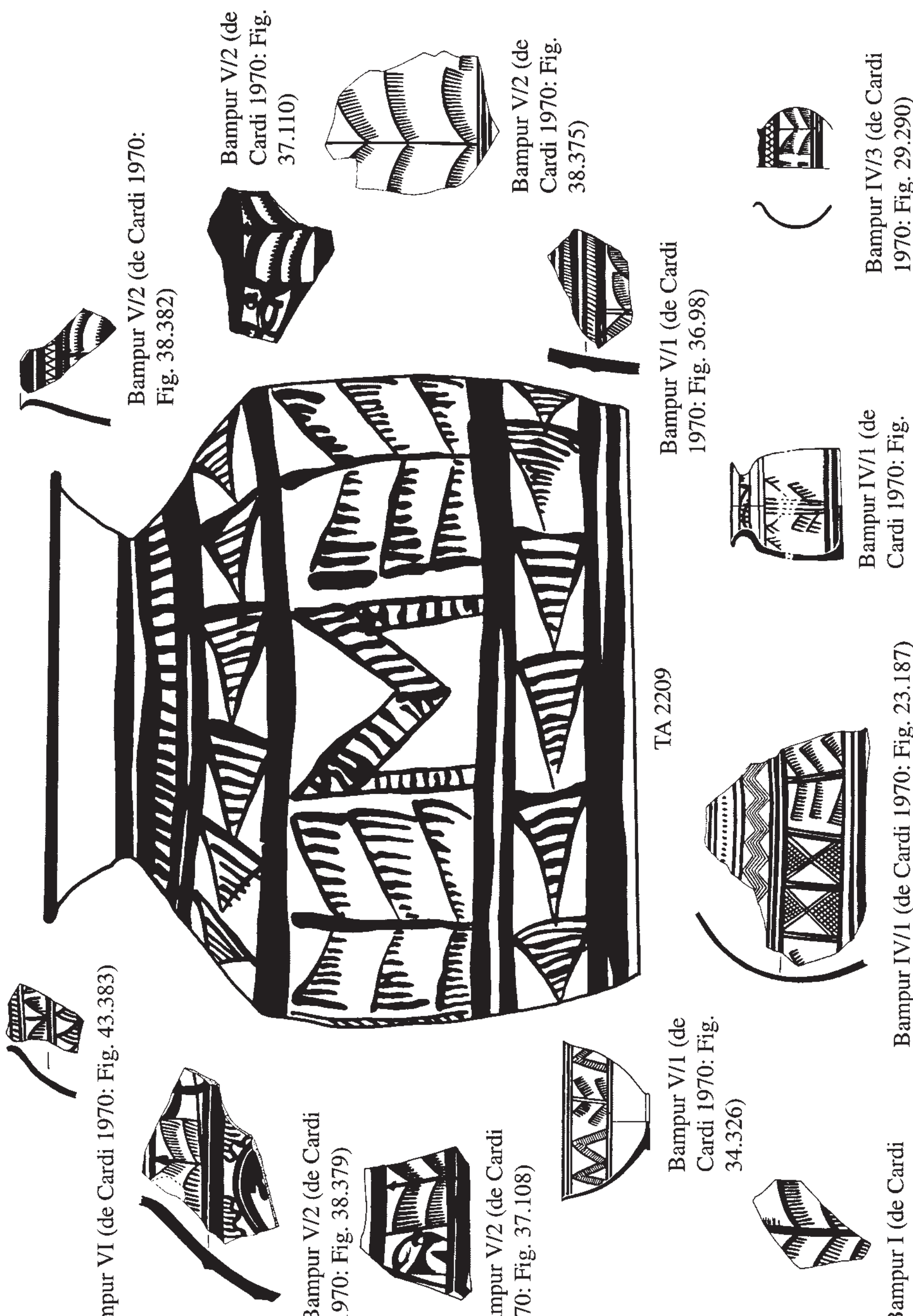

Bampur VI (de Cardi 1970: Fig. 43.383)
Bampur V/2 (de Cardi 1970: Fig. 38.382)
Bampur V/2 (de Cardi 1970: Fig. 37.110)
Bampur V/2 (de Cardi 1970: Fig. 38.379)
Bampur V/2 (de Cardi 1970: Fig. 37.108)
TA 2209
Bampur V/2 (de Cardi 1970: Fig. 38.375)
Bampur V/1 (de Cardi 1970: Fig. 36.98)
Bampur V/1 (de Cardi 1970: Fig. 34.326)
Bampur IV/1 (de Cardi 1970: Fig. 25.258)
Bampur IV/1 (de Cardi 1970: Fig. 23.187)
Bampur I (de Cardi 1970: Fig. 17.12)
Bampur IV/3 (de Cardi 1970: Fig. 29.290)

Fig. 16

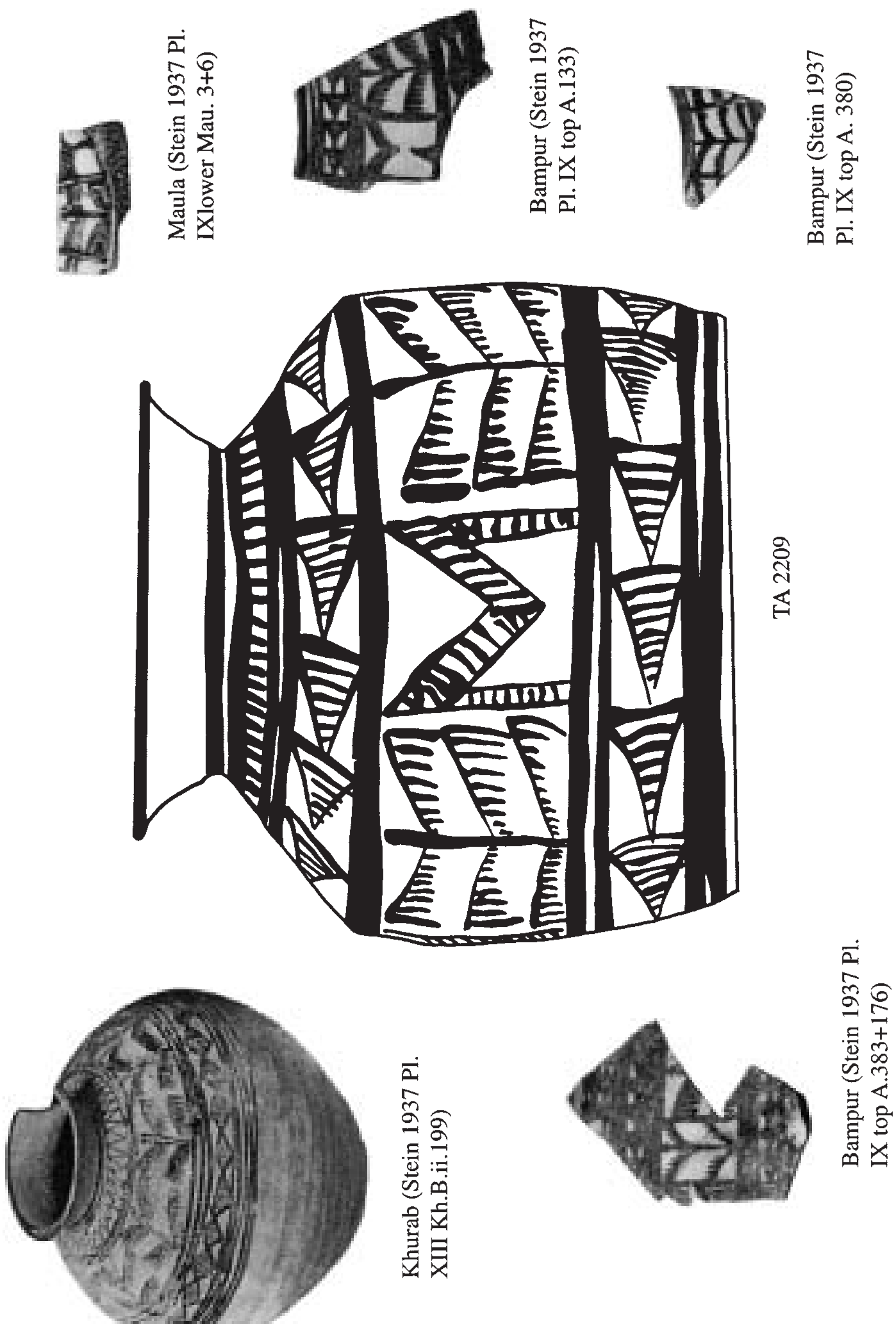

Maula (Stein 1937 Pl. IXlower Mau. 3+6)
Bampur (Stein 1937 Pl. IX top A.133)
Bampur (Stein 1937 Pl. IX top A. 380)
TA 2209
Khurab (Stein 1937 Pl. XIII Kh.B.ii.199)
Bampur (Stein 1937 Pl. IX top A.383+176)

Fig. 17

Tepe Yahya IVC1 (Potts 2001: Fig. 2.15.C)

Tepe Yahya IVB6 (Potts 2001: Fig. 3.22.B)

Tepe Yahya IVB6 (Potts 2001: Fig. 3.22.C)

Fig. 18

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LE MASTIC DE BITUME: UN MATÉRIAU REMIS EN QUESTION

PAR

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En 1991 paraissait dans la Recherche, les résultats préliminaires d'une investigation archéométrique portant sur le bitume antique dans le sud-ouest de l'Iran (Connan – Deschesne, «Le bitume dans l'antiquité», n° 229, février 1991). L'étude définitive a été publiée en 1996 sous le titre «Le Bitume à Suse, collection du musée du Louvre», Paris, RMN, 1996.

Le but de cet ouvrage était l'étude de la collection d'objets provenant des fouilles de Suse (Iran du sud ouest): vases, sculptures en bas-relief ou ronde-bosse, supports, cylindres, petits objets de la vie quotidienne; tous sont réalisés dans un matériau d'aspect bitumineux. Après en avoir dressé le catalogue, il fallait déterminer la nature de ce matériau qui semblait à bien des égards être une pierre portant des traces évidentes de taille directe, mais identifiable à aucune pierre connue.

La présence de bitume est détectable à l'odeur dès qu'on gratte légèrement la surface des objets et des grains de calcite blanche sont disséminés de façon plus ou moins groupée. Il ne s'agit donc ni d'un calcaire bitumineux classique moins chargé en matière organique, ni d'un schiste bitumineux qui est lité et friable. La faible densité du matériau, l'absence de sensation de froid au toucher diffèrent d'une pierre classique. Les analyses menées par ELF ont conclu à l'hypothèse d'un mélange de calcite broyée et bitume.

Dans la conclusion de l'ouvrage, nous nous étions étonnés des pratiques des anciens Susiens. Pourquoi élaborer une pierre artificielle assez banale d'aspect alors que des roches grises ou noires, la diorite ou la chlorite par exemple, n'étaient pas difficiles à se procurer? Pourquoi un matériau artificiel n'aurait pas été tout simplement façonné au moule pour produire des exemplaires multiples? Cependant, un matériau présentant les mêmes proportions de composants minéraux et organiques et dur donc sculptable fut reconstitué en laboratoire. Mais, on peut comparer à d'autres matériaux

artificiels comme la vaisselle en plâtre du VII^e^ millénaire à Choga Sefid, la vaisselle blanche du VI^e^ millénaire en Syrie, la fritte au III^e^ millénaire, le stuc, le verre ou les matériaux composites à base de plastique sont autant de matériaux artificiels qui sont moulés aussi bien que sculptés en taille directe. Les fouilles de Suse ont livré de nombreuses traces de travail du bitume: extrémités de longs galets maculés de bitume qui ont servi à remuer des mélanges, fours à bitume, des blocs de matière première brute prête à l'emploi. Bref, malgré nos hésitations et surtout en l'absence d'une référence naturelle indiscutable, l'hypothèse d'un mélange artificiel s'imposait. Le matériau utilisé par les habitants de Suse a alors été dénommé «*mastic de bitume*» pour indiquer son côté artificiel et pour le différencier des mélanges bitumineux ordinaires pour lesquels nous conservons le terme de «*bitume*».

Quelques mois après la publication de l'ouvrage, une prospection dans la région des Zagros, au nord est de Suse a apporté une moisson d'échantillons. Parmi eux, certains ont paru très proches du matériau de Suse. Une analyse rapide a confirmé qu'il s'agissait d'une roche très chargée en matière organique et en calcite broyée. Ces échantillons proviennent d'un filon situé à 140 kms au nord est de Suse, large d'environ un mètre, long de quelques kilomètres: c'est donc un filon peu important, difficile à repérer et difficile d'accès. Cette roche kérogène rare, située en général à très grande profondeur, n'a pu apparaître en surface que grâce à un mouvement tectonique violent. Elle a dû être repérée très tôt par les habitants de la plaine du Dehluran, au nord ouest de Suse ce qui explique les quelques artefacts réalisés dès les VI^e^ et V^e^ millénaire à Choga Sefid ou Djaffarabad, puis par les Susiens qui en ont fait un plus grand usage. C'est ce qui explique aussi le peu de diffusion du matériau. Le gisement est peu important, très localisé, la roche extraite n'est pas d'une telle beauté qu'elle fasse l'objet d'une exportation lointaine et les quelques objets trouvés en Mésopotamie sont soit des objets d'exportation, l'iconographie susienne en témoigne, soit des «hasards» (la plaque de Dudu ou la tête d'orant de Tello).

A la lumière de cette découverte qui infirme notre première hypothèse et que J. Connan expliquera dans une publication scientifique après une série d'analyses complémentaires, il nous a paru bon de reprendre les anciennes publications de fouilles en Iran depuis le XIX^e^ siècle afin de voir comment les fouilleurs ont perçu ce matériau si particulier au point que personne ne se mettait d'accord sur un vocable fixe. De même, les

analyses récentes mettant en lumière les difficultés d'identification. Lorsque nous nous référerons aux objets du catalogue du Louvre, nous continuerons à utiliser le terme *mastic de bitume* en attendant de trouver un terme plus adéquat et le terme de *bitume* pour les quelques objets réalisés dans un mélange. Nous leur appliquerons une graphie en italique de même que pour tous les objets du catalogue qui seront cités.

L'ingénieur des mines Jacques de Morgan est envoyé en 1891 en Iran pour prospecter les richesses en hydrocarbures de la région de Suse. Sa passion pour l'archéologie le conduit à prendre en charge dès leur début en 1897, la direction des fouilles de Suse. Dans la première publication des Mémoires (MDP I, 1900, p. 46-47, p. 66), il mentionne des gisements de bitume importants sur l'Ab-é-Diz et dans les montagnes du Luristan et la présence au Pusht-è-Kuh et dans le Luristan de calcaires bitumineux qu'il qualifie de fragiles et de mauvaise qualité. Ils auraient pourtant été utilisés par les Achéménides pour les colonnes et les chapiteaux de l'Apadana et du palais de Suse. Gautier et Lampre, pour leur part, parlent des colonnes cannelées en grès bitumineux du Tell de la Citadelle. Dans le même volume, Morgan publie le premier objet en *mastic de bitume*, le bas-relief de la Fileuse *431* sous la dénomination «pierre noire» (MDP I, 1900, p. 159) et un objet en «calcaire bitumineux noir» dont il ne fait qu'un dessin sans cote mais qui semble être le négatif du mortier *88* (MDP I, 1900, p. 85). Il est étonnant que Morgan, géologue de formation, ait identifié les colonnes et chapiteaux de l'Apadana ou certains kudurrus (MDP I, 1900, p. 170-172) comme des calcaires bitumineux, ce que démentiront les analyses, et qu'il n'ait pas reconnu la structure bitumineuse si caractéristique du relief de la Fileuse. En revanche, il a tout de suite assimilé les deux objets à une roche.

Dans MDP VII de 1905 (p. 57), Morgan publie plusieurs objets du catalogue, le cachet *463*, les pendentifs *290* et *291*, le cylindre *429*, la fusaïole *442*, sous l'étiquette de «calcaire bitumineux». Dans le même volume (MDP VII, 1905, p. 94, note 2), Roland de Mecquenem mentionne 16 cylindres en «matière brune» qu'il définit de la façon suivante: «ce que nous désignons ainsi est une pâte bitumineuse, argilo-calcaire, naturelle ou spécialement préparée». Parmi les cylindres identifiés d'après leur empreinte, on reconnaît les numéros *357, 395, 382, 445, 322, 167*. Certains de ces cylindres en «matière brune» ont été retirés de la série, se révélant être, après analyse, de beaux calcaires noirs ou gris. Curieusement, il signale une moitié de cylindre préparé pour la gravure, non pas en

«pâte brune» mais en «matière bitumineuse». D'après les dimensions, il s'agit du cylindre *466* qui est pourtant dans le même matériau que les précédents! Le petit chariot *257* supportant un hérisson en calcaire est taxé du même terme de «matière bitumineuse», alors que celui du lion *258*, les plaquettes *259, 260, 261, 267, 270, 273* et la roue *262* sont eux en «calcaire bitumineux» ou «calcaire noir ou brun bitumineux». Or, tous ces objets sont réalisés dans le même *mastic de bitume*. On ne voit pas sur quels critères Mecquenem s'est appuyé pour différencier ainsi le matériau, pour les uns une pâte obtenue à base de bitume mou, donc un mélange, pour les autres une pierre naturelle qui serait de même nature que celle utilisée pour les colonnes de l'Apadana. Lorsque la texture du matériau lui paraît friable, il l'appelle «terre bitumineuse». C'est le cas des perles *287* qui se sont pourtant révélées être du mastic de bitume à l'analyse. Donc en 1905, Mecquenem pressent deux matériaux, l'un qui serait un mélange (matière brune, matière bitumineuse, pâte bitumineuse dont il dit pourtant à propos d'un cylindre qu'il est en attente de gravure ce qui laisse plus supposer une pierre), l'autre qui serait une pierre naturelle. Le plus étonnant est que J. de Morgan, en tant que géologue, n'ait pas vu qu'il s'agissait du même matériau.

En 1910, dans sa publication des Nouvelles Fouilles de Tello, Cros signale très minutieusement toute présence de bitume. Celui-ci est omniprésent dans sa fonction préférentielle: l'imperméabilisation: bassins, «rigoles», sols, rampes, nattes, paniers, vases. Lorsqu'il décrit plusieurs vases en «bitume» encastrés, il est très probable que ce sont des jarres en terre cuite enduites intérieurement et peut-être extérieurement au bitume. Leurs grandes dimensions ne s'accordent pas avec un mélange bitumineux beaucoup trop friable, ni même avec un mastic de bitume ce qui supposerait une masse considérable de matériau. Dans les listes très détaillées d'objets mis au jour, il signale plusieurs éléments «sculptés» en pierre noire ou grise ou en «matière noire». C'est le cas de la tête inachevée *AO 4112, Fig. 25, p. 191* (Cros, 1910, p. 12), et de quelques petits objets identifiés comme étant en *mastic de bitume*. Par contre, il s'étend sur une découverte qu'à juste titre il juge intéressante et qui a été pour nous un support à l'hypothèse du mastic de bitume artificiel. Il décrit «deux blocs de matière noire et compacte» identifiée par lui comme étant du bitume. Ces blocs se présentent comme «deux grandes pierres à bâtir… bien taillées (ou coulées), à arêtes vives»… Le terme «coulé» fait immédiatement penser à un mélange alors que le reste de la description rappelle le

travail de la pierre. Cros dit avoir «démoli ces blocs pour en mieux déterminer la nature». Il continue ainsi la description «les parois extérieures étaient d'une grande dureté sur environ 25 cms, l'intérieur était beaucoup plus tendre, comme pâteux et me parut consister en un mélange de bitume avec de la terre et de la chaux, celle-ci accusée par de nombreux petits points blancs.... Je donne ces détails minutieux pour permettre de déterminer la composition de cette curieuse matière». Tout dans cette partie de la description rappelle un mélange. Etant donné le contexte où ils ont été trouvés: «une sorte de dépôt pour des approvisionnements», Cros suggère que «c'était sous cette forme que l'on solidifiait et que l'on découpait le bitume pour en faciliter le transport et l'emmagasinage». Il s'agirait donc d'un matériau artificiel conditionné et livré sous cette forme. L'idéal serait de retrouver ces deux blocs de dimensions imposantes (L. 3,60, l. 1,70 à 2 m, H. 1 m), laissés *in situ* et d'y faire des prélèvements pour analyse. S'il se confirmait qu'il s'agit d'un mastic de bitume, la plaque de Dudu pourrait alors avoir été tirée de ces blocs. Mais s'il s'avère que le mastic de bitume est une roche naturelle, pourquoi l'intérieur serait-il pâteux, à moins que, mais c'est peu probable, l'incendie très violent signalé par le fouilleur à quelques mètres des blocs ait agi sur la structure même de la roche

Dans MDP XII de 1911 (p.6-15), M.C. Soutzo publie les monuments pondéreux trouvés à Suse. Il décrit 4 poids en forme de canard en calcaire noir bitumineux (*248, 249, 251, 252*), sans ambiguïté. En revanche, dans le même volume on constate chez Pézard dans son étude sur les intailles susiennes une grande confusion des termes qui implique une incertitude. Les cylindres *140* et *170* sont en «pâte bitumineuse», le cylindre *158* est en «bitume», cinq cylindres, les numéros *171, 173, 175, 176, 322*, sont en «calcaire bitumineux», cinq autres, les numéros *147, 149, 177, 178, 409*, sont répertoriés comme «calcaire noir ou gris» (MDP XII, 1911, p. 92-107). Or, il s'agit du même matériau relativement facile à identifier par sa faible densité par rapport à une pierre classique et son odeur caractéristique. Il semble que ce flou sur la nature du matériau s'accroît au fur et à mesure des découvertes à Suse. Il est étonnant de voir Morgan, qui jusque là ne semblait pas douter de la nature de roche des objets qu'il a publiés en 1900 et 1907, notamment le bas-relief de la *Fileuse 431* et qui fait la distinction avec le bitume mou destiné à l'étanchéité, signaler en 1912 (MDP, XIII, 1912, p. 10) à la Nécropole «deux vases cylindriques en «pâte bitumineuse», précisant qu'il s'agit «d'objets très grossiers et lourd d'exécution».

Le terme pâte évoque le mélange. Outre que les vases cylindrique sont rares, ceux qui sont en mastic de bitume ne proviennent pas de la Nécropole et, pour la majorité, ils présentent cette lèvre plate et large que n'aurait pas manqué de signaler Morgan. L'un d'eux conservé à Téhéran (*Fig 52*) est effectivement de facture grossière, mais ils sont tous de la même nature, à savoir du *mastic de bitume*. Dans le même volume et dans l'étude qu'il consacre à la céramique peinte de l'Acropole de Suse, E. Pottier traite de nombreux objets en *mastic de bitume* qu'il qualifie d'un nouveau nom «asphalte noir». Ainsi du torse d'homme *118*, des vases *66, 67, 76, 87*, des supports *124, 127* à *131*, *133* à *136*, le relief *139*, les figurines *104* et *110*, les têtes *120* et *136* (MDP XIII, 1912, p. 62-64, pl. XXXIII à XXXVII). La différence entre asphalte et bitume est affaire de spécialistes. Il ne semble pas que Pottier ait eu la volonté délibérée d'introduire un distinguo entre les deux. Il parle «d'asphalte naturel solidifié à l'air libre, ce qui donne une matière noire et friable dans laquelle on sculpte des statuettes et des bas-reliefs». Il sous-entend donc par là une pierre naturelle. Mais plus loin, il mentionne des «bitumes sculptés» qu'il compare aux objets trouvés à Tello, notamment la plaque de Dudu, dont il dit que «quelques sculptures sont travaillées dans la même substance bitumineuse». Ici nous sommes dans le domaine du mélange artificiel. En fait, il semble que plus on avance dans le temps, plus la confusion grandit. C'est probablement ce malaise qui va conduire Pottier à demander à H. Le Chatelier de faire la première analyse du matériau. Le compte rendu des résultats paru dans MDP XIII, 1912, (p. 162) est succinct et le titre peu éclairant: «Note sur la matière noire et bitumineuse de certains reliefs et statuettes» Il ne définit le matériau ni comme pierre naturelle, ni comme matériau artificiel, mais il sous-entend peut-être par bas-relief et statuette un travail de la pierre.

Delaporte, dans son Catalogue des Cylindres Orientaux, Cachets et Pierres Gravées du Musée du Louvre paru en 1920 relève pour Tello six cylindres qu'il qualifie tous de «calcaire bitumineux». Pour Suse, il mentionne 41 cylindres. Le cachet *51* du IV^{e} millénaire (Paris, 1920, S 230) et les 17 cylindres du III^{e} millénaire sont majoritairement qualifiés de «calcaire bitumineux (*141, 144, 159, 171, 152, 182, 175, 166, 176, 177, 188*) (Paris, 1920, S 117-111-125-193-278-325-358-381-416-421-477), cinq sont dits en «pâte bitumineuse» (*140, 149, 170, 187, 167*) (Paris, 1920, S 86-8-359-474-374), un est étiqueté «bitume» (*158*) (Paris, 1920, S 402). En revanche, la proportion s'inverse au II^{e} millénaire. Sur 23 cylindres, 15 sont en «pâte bitumineuse» (*382, 318, 314, 316, 323, 357, 358, 308, 338,*

375, 395, 414, 412, 409, 405) (Paris, 1920, S 255-492 à 498-500-501-504-507-508-509-512), 7 sont en «calcaire bitumineux» (*430, 322, 350, 415, 420, 463, 427*) (Paris, 1920, S 24-499-502-505-511-543-546), un seul est en «bitume» (*429*) (Paris, 1920, S 22). Delaporte s'est peut-être laissé influencer par Pézard qui, en 1911, avait publié plusieurs de ces cylindres. Il a rectifié certaines de ses erreurs: les cylindres *149* et *177* (Paris, 1920, S 8 et 421)pris pour des calcaires ordinaires ont été réintégrés dans la famille des matériaux bitumineux mais les uns sous la dénomination «pâte bitumineuse» (*149* et *409*), un autre sous celle de «calcaire bitumineux» (*177*). Pour Pézard, le cylindre *173* est réalisé dans un «calcaire bitumineux». Pour Delaporte il fait partie des 7 cylindres en «calcaire gris ou noir» qui se sont révélés être en *mastic de bitume*, donc réintégrés dans la collection. On voit combien l'identification entre calcaire bitumineux et calcaire gris ou noir non bitumineux n'est pas évidente. Le terme de bitume donné à deux cylindres (*158 et 429*) (Paris, 1920, S 402 et 22) est étonnant. Ou le bitume est pur et solidifié, il s'appelle alors asphaltite et son apparence proche de l'obsidienne le caractérise immédiatement, ou le bitume est liquide ou pâteux et inadapté à la fonction de cylindre. On ne voit donc pas pourquoi Delaporte fait une distinction entre bitume et pâte bitumineuse. Mais, lorsqu'il ne reconnaît pas la présence d'hydrocarbure dans le matériau, il associe immédiatement celui-ci à la famille des roches calcaires. Or, quand on réunit tous ces cylindres, rien ne les distingue vraiment les uns des autres: même densité légère, même sensation au toucher et surtout même odeur caractéristique, en dépit de quelques différences d'aspect mineures (polissage moins fin, terre de fouilles incrustée,…) qui peuvent être perçues.

On a vu que dès 1905 Mecquenem a du mal à cerner le matériau. Il essaye de définir cette «matière brune», il parle parfois de calcaire bitumineux. A partir des rapports de fouilles des campagnes 1914 à 1924, paru dans les n° XIX (1922) et XXI (1924) de la Revue d'Assyriologie et en 1928 dans le MDP XX, il n'utilise plus que le terme «bitume». Il fait cependant parfaitement la distinction entre les différents aspects du bitume et ses différentes applications. Ce sont les qualificatifs associés au terme bitume qui vont déterminer la nature du matériau. Pour le bitume liquide ou semi-liquide utilisé en étanchéité, comme mortier ou comme colle on emploie «lié», «imperméabilisé», «scellé», «jointoyé», «enduit», «calfaté», «peint»… au bitume. Pour les objets réalisés «en bitume», ce dernier sera «taillé», «sculpté», «à décor incisé ou en relief». Mecquenem

ne semble pas faire de distinction entre le matériau des manches de poinçons en *bitume* (*467*) et celui des objets en *mastic de bitume*, par exemple la petite coupe à manche *196* (R.A. XXI, 1924, p. 111). La coupe tripode *221* est décrite comme un «plateau de bitume sculpté… dont chaque pied est un bouquetin sculpté» (R.A. XIX, 1922, p. 136). La coupe *201* est «en bitume taillée… décorée de bas-reliefs… une tête de chèvre en haut-relief, les cornes enlevées dans la matière…» (R.A. XXI, 1924, p. 113). Les coupes *53, 55, 61* «en bitume taillé» sont associées à deux vases en albâtre identiques (MDP XX, 1928, p. 109). Incontestablement Mecquenem utilise un langage adapté au travail de la sculpture. La seule fois qu'il utilise le terme calcaire bitumineux, c'est au sujet d'une assise de colonne identique à celui des colonnes de l'Apadana dont on a vu qu'elles sont en calcaire gris ordinaire (R.A. XIX, 1922, p. 116).

Lorsque Mecquenem publie dans MDP XXV de 1934 les fouilles de Suse effectuées entre 1929 et 1933, il reste fidèle au terme générique «bitume». Pourtant, il introduit une nuance pour les manches de poinçons du *type 467 à 471* qu'il dit être en «terre bitumineuse» (MDP XXV, 1934, p. 180). La majorité des objets en *mastic de bitume* qu'il mentionne sont qualifiés de «bitume taillé». C'est le cas de la statuette de lion couché *238*, des coupes *199, 202, 213* ou d'une coupe de Téhéran à protome de bélier (*Fig. 43*), des cylindres *185, 330, 346*, tous trouvés dans des sarcophages du Donjon (MDP XXV, 1934, p. 211-233). Les yeux sont décrits avec le terme «bitume» aussi bien pour la pupille qui peut-être en *mastic de bitume* (*283* à *285*) que pour le scellement dans l'orbite à l'aide de bitume mou. Ces objets sont toujours associés ou comparés à des objets en pierre. Mecquenem a donc pressenti la parenté des matériaux..

Dans le même volume N.T. Belaiev reprend l'étude des documents pondéraux des fouilles de Suse de 1921 à 1933. Dix poids en forme de canard ou d'olive sont mentionnés en «calcaire bitumineux». Neuf figurent au catalogue, *248 à 256*. Belaiev comme Soutzo semblent sûrs de la nature de pierre naturelle du matériau (MDP XXV, 1934, Tab. I-II et VIII).

Dans le même temps, H. de Genouillac publie en 1934 et 1936 les Fouilles de Telloh, Tome I et II. Il signale les utilisations classiques du bitume: étanchéité, calfatage, colle. Plusieurs objets sont catalogués de «pâte bitumineuse». C'est le cas notamment du «sceptre» (*p. 179, fig. 21*) (1934, p. 56 et 63)) ou de la patte de taureau (*p. 268, fig. 59*) (1936, p. 37), mais aussi de perles, clous de pierre proches des n° *27 et 28*. Il

compare des fragments de vase à un vase en «pâte bitumineuse» de Suse, sans précision (1934, p. 91). Mais il utilise aussi le terme «pâte bitumineuse» pour les manches d'outils du type *468* ou *469*, ou des bouchons de jarre (cf. *475, 476*) (1934, p. 101-102). Il ne semble pas avoir noté la différence de texture pourtant évidente entre les deux types de matériaux. Exception faite de ces deux contre-exemples, chaque fois que Genouillac mentionne des objets en «pâte bitumineuse», il les classe dans la rubrique «objets en pierre» ou dans «restes minéraux», les associant implicitement à ce type de matériau.

Genouillac est un cas isolé, le terme générique «bitume» semble désormais plus généralement adopté. En 1943, G. Contenau dans MDP XXIX (p. 191) mentionne la belle coupe *197* «taillée en bitume» ce qui sous-entend un travail de sculpture dans un matériau qui normalement ne peut être que liquide ou pâteux. Mecquenem publiant les fouilles de Suse de 1933 à 1939 dans MDP XXIX (1943), reste fidèle au terme générique «bitume» sans même toujours lui associer de qualificatif. Les coupes *1, 87, 189, 195, 212, 214*, la coupe de Téhéran (*fig. 56*) et un très grand nombre de «coupes, vases marmites, écuelles», non identifiées formellement mais dont les dessins très proches des vases de la collection sont en «bitume» (MDP XXIX, 1943, p. 53 à 119). Quelques objets sont plus précisément dits en «bitume taillé»: le pied d'un tripode et un vase de Téhéran (*fig. 54 et 16*). Les cylindres et les cachets sont décrits en «bitume» ou en «bitume taillé décorés de bas-reliefs» (MDP XXIX, 1943, p. 130). Une fois de plus le terme de calcaire bitumineux est réservé aux colonnes et bases de l'Apadana et du palais (MDP XXX, 1947, p. 34).

Le Breton, dans un article paru dans M.D.P. XXX (1947, p. 120-219) sur la céramique peinte aux environs de Suse et à Suse, utilise exclusivement le terme «bitume» aussi bien pour des objets clairement définis comme étant en «mastic de bitume» tels les deux petits vases du catalogue *52* ou celui de Téhéran (*fig. 18*) ou une masse d'armes de Djaffarabad (M.D.P. XXX, 1947, p. 127, fig. 6.6; p. 148-149) réalisée dans le même matériau que les objets de Suse mais avec une nette antériorité. Dans sa communication publiée dans Iraq XIX en 1957 (p. 79-124), il s'attache essentiellement à l'iconographie et à l'analyse stylistique des objets. L'aspect technique des matériaux ne l'intéresse visiblement pas. Il parle de pierre, précise parfois lorsqu'il s'agit d'albâtre et emploie le seul terme «bitume» pour les objets en *mastic de bitume* du milieu du III^{e} millénaire qu'il mentionne: la plaque aux orants *139*, les supports *126, 128, 129, 130,*

134, 135, le protome d'ours *n° 110*, la tête masculine *117* (Iraq XIX, 1957, p. 120).

C'est en 1955 qu'une première étude scientifique du bitume en tant que matériau archéologique est entreprise par R.J. Forbes. Il tente de dresser une nomenclature des matériaux bitumineux, de mettre de l'ordre dans les termes utilisés en essayant de trouver des correspondances entre les termes modernes et la multiplicité des termes anciens, enfin, il analyse plusieurs échantillons archéologiques. Il souligne d'emblée la difficulté de la tâche: «…though excavators' reports furnish us with a wealth of material, only very little scientific investigation has hitherto been applied to the products found, with the consequence that the enquirer has often to be satisfied with a vague description such as «asphalt» or «pitch» or «bituminous earth» (1955, p. 4). Dans les rééditions de 1955 et 1993 de son ouvrage, il s'appuie sur Abraham pour définir les termes «bitume», terme générique, et «asphalte», produit organique de la famille des bitumes, les deux pouvant être visqueux ou solides si un filler minéral a été naturellement ou artificiellement mélangé au produit organique. Très vite il introduit la confusion entre les deux termes surtout lorsqu'il se réfère à des articles américains où le terme «asphalt» est le plus souvent employé. Dans l'édition de 1993, il conclue le chapitre sur la définition des matériaux bitumineux ainsi «as both the petroleum asphalts and native asphalts are the same, chemically and physically, we will call them «bitumen» for our purpose.»!

On peut regretter que tous les échantillons analysés soient issus de mortiers qu'il appelle parfois mastic surtout lorsqu'il s'agit de couches d'étanchéité, ou de colle. Un seul objet est analysé, un anneau d'Ur, plaqué à l'origine. Il s'agit d'un mélange bitumineux traditionnel. De plus aucun d'eux ne provient de Suse. Curieusement dès qu'il aborde l'historique des «trouvailles», sa rigueur faiblit. Il semble dire que les artistes mésopotamiens et susiens ont utilisé deux sortes de matériau, l'asphalte naturel et le mastic (1955, p. 93)! Sa manière de présenter les quelques objets en matériau bitumineux, dont ceux de Suse, est étonnante. Dans la légende de la photo de la coupe tripode *221*, celle-ci est dite en «bitume» (1955, Fig. 28). Dans le texte il dit qu'à Suse on sculpte des vases en forme de cône, il s'agit probablement des supports, en «roche asphaltique» et des figurines «taillées dans du bitume». Il montre une photo du torse d'homme *118* qui est en «pierre bitumineuse» (1955, fig.30) et présente la plaque de Dudu (*fig. 6, p. 124*) comme ayant été moulée dans «a synthetic mixture

of bitumen and loan which has now become as hard as a stone». Nous avons donc quatre termes différents pour des objets formellement identifiés comme étant tous réalisés dans le même matériau appelé «*mastic de bitume*» (1955 et 1994, p. 93-99). En résumé, sur le strict plan de l'exactitude des termes et sur le matériau si particulier des objets de Suse, on n'est guère plus avancé.

C'est probablement pour cette raison que lorsque R. Ghirshman commente ses fouilles des campagnes 1964-65 et 1965-66 dans Arts Asiatiques n^{o} 11-2, 15 et 17, il utilise indifféremment le mot bitume pour les mortiers de construction, les couches d'étanchéité ou pour les deux coupes *191* et *206* trouvées dans des tombes de la Ville Royale. Pour celles-ci, il précise qu'elles ont été «taillées dans du bitume», reconnaissant implicitement le travail de sculpteur dans un matériau solide (A.A. XVII, 1968, p. 7).

Dans les années 78-80, A. Le Brun et E. Carter qui fouillent à Suse, probablement influencés par H. Wright venu en Susiane faire une nouvelle étude scientifique des matériaux bitumineux, en collaboration avec une équipe de géochimistes d'Amoco Research Center (R.F. Marschner et L.J. Dufy), cherchent à être plus précis dans leur description. Si le terme «bitume» est désormais employé pour tout ce qui est mortier, colle, étanchéité, les objets sont mieux observés: Le Brun mentionne des plaquettes rectangulaires faites dans une «pâte grise» ou des perles en «pâte noire» ou «matière noire». Or, les mêmes existent en *mastic de bitume* (*Cf. n^{o} 20-21*) (DAFI IX, 1978, p. 90, fig.41-28-29; p. 92, fig. 41-12; p. 144, fig. 41-6). E. Carter mentionne à la Ville Royale I un bouton en «pierre noire» ou un pendentif en forme de croissant du type du n^{o} *24* en «rock asphalt» avec précision «bitumen» à côté! Un cylindre avec une scène de présentation est dit «bitumen» avec la même précision «rock asphalt», or les cylindres avec scènes de présentation sont nombreux en «mastic de bitume» (*catal. 295 à 298*) (DAFI XI, 1980, p. 19, fig. 6c; p. 29, fig. 54-9; p. 120).

Marschner, Dufy et Wright publient les résultats de leurs recherches dans Advances Chemistry series n^{o} 2 et dans Paléorient 4 (1978). Il ressort de leur étude qu'il existe des sources de «bitume naturel» et des gisements «d'asphalte durci» qui seraient le produit de mélanges de bitume et de minéraux divers (Paléorient 4, 1978, p. 97-98). L'ambiguïté persiste dans les termes car lorsqu'ils parlent du matériau liquide ou visqueux, ils l'appellent «bitume», lorsque le bitume est mélangé avec des impuretés minérales et végétales en quantité plus ou moins importantes et se présente

donc sous une forme plus ou moins dure, on l'appelle alors «asphalte naturel». Ils en arrivent à se demander si les susiens utilisaient le bitume liquide des sources, en exploitaient les parties durcie, ou bien de la roche asphaltique solide dont un échantillon proviendrait d'un filon très proche mais qu'ils ne localisent pas avec précision. Ils n'excluent pas le fait que les gens de Susiane avaient délibérément mélangé du sable et des limons au bitume pour en faire un asphalte artificiel.

Leur étude a porté sur des échantillons de «bitume» pris dans des dépôts naturels à proximité d'Aïn Gir et des échantillons provenant de sites archéologiques autour de ce site. Ils sont appelés «échantillons d'asphalte» dont Wright dit qu'ils sont «soit des artefacts soit des asphaltes utilisés dans des fonctions incertaines» (Paléorient 4, 1978, p. 100)! Il ressort que sur les 50 échantillons analysés, 35 résultent de stades intermédiaires de préparation. Ils sont répartis en 4 catégories selon le degré de dureté, depuis le «rock asphalt» jusqu'au «melted asphalt». Il suggère ainsi qu'on aurait à faire à une «chaîne de transformation» du matériau. Ils en concluent que dès le V^{e} millénaire, toute une technologie du bitume s'élaborait, permettant des utilisations aussi différentes que les applications en étanchéité ou la fabrication d'une variété d'objets en fonction des transformations naturelles ou artificielles du matériau.

En 1994, dans son ouvrage «Ancient mesopotamian materials and industries» (Oxford, 1994), P.R.S. Moorey adopte le terme bitume pour tout ce qui est utilisation de bitume ou liquide. Pour les objets de Suse, il s'appuie sur les conclusions d'un premier article paru dans la Recherche (Connan – Deschesne, «le Bitume dans l'antiquité», La Recherche n^{o} 229, février 1991) qui précèdent celles qui seront publiées dans «Le Bitume à Suse, collection du musée du Louvre» paru en 1996 où l'hypothèse du mastic de bitume artificiel est retenue pour la production susienne. Il ne semble pourtant pas entièrement convaincu car, pour lui «Il n'y a aucune preuve que le bitume ait été incorporé à l'argile dans l'Antiquité bien que des expériences récentes aient été tentées en ce sens» (1994, p. 305). Il fait allusion aux essais de reconstitution du matériau réalisés en laboratoire. En tout cas, dans le cours de son ouvrage, les termes restent tout aussi imprécis.. Dans la même page, on trouve: «les poutres sont préservées avec du bitume…. les portes sont enduites d'asphalte…» (Moorey, 1994, p. 356-357).

Dans le même temps, le département des Antiquités Orientales du musée du Louvre entreprenait une étude globale de la collection des objets en matière bitumineuse de Suse dans le cadre d'un mémoire de diplôme de

l'Ecole du Louvre. Le Laboratoire des Musées de France était sollicité pour examiner les objets et analyser plusieurs d'entre eux. Il procédait à une classification en 4 groupes en fonction de leur teneur en matière organique et fillers minéraux et/ou végétaux associés (Lahanier, «Analyses d'objets en bitume provenant de Suse», *Annales du Laboratoire des Musées de France*, 1977, p. 48-68). Le matériau très spécifique des objets de la collection paraissait «un mélange artificiel de bitume et de calcite qui devait être moulé ou sculpté». D'autres laboratoires étaient consultés (SNEA(P)-ELF, I.F.P., Laboratoire des Ponts et Chaussées, Laboratoire de géochimie de l'université d'Orléans). Certains penchaient pour l'hypothèse d'un matériau artificiel, d'autres optaient pour une roche naturelle. Dans le mémoire de 1982 (Deschesne, «le Travail du bitume à Suse), l'hypothèse la plus admise du matériau artificiel appelé «mastic de bitume» par C. Lahanier, a été adoptée.

Quelques mois après, le Louvre sollicitait à nouveau la société ELF pour reprendre l'étude de façon plus systématique. Elle en confiait la partie scientifique à J. Connan et les résultats étaient publiés dans l'ouvrage de 1996.

En conclusion, on conviendra que si le doute règne même chez les spécialistes, il était difficile pour les archéologues de déterminer clairement la nature même du matériau auquel nous avions affaire et de lui donner un nom. Si à peu près tout le monde s'accorde sur l'utilisation du mot «bitume» pour tout ce qui est mélange visqueux, artificiel ou non, en revanche le problème des objets de Suse restait à éclaircir.

On constate très tôt, à partir de 1905, une certaine confusion pour qualifier le matériau de ces objets. Parallèlement à la désignation de calcaires noirs ou bitumineux apparaît la notion de «pâte bitumineuse» ou «matière brune naturelle ou spécialement préparée». L'hypothèse d'un mélange artificiel est dans l'air. Plusieurs objets en mastic de bitume du catalogue sont réalisés dans cette «matière brune». A partir de 1912, peut-être par prudence, on note l'utilisation de plus en plus fréquente du terme générique «bitume» et ce sont les adjectifs liés à l'aspect physique du matériau ou les termes liés au travail qui déterminent la qualité de roche naturelle ou de mélange artificiel. Le matériau est sculpté, taillé, gravé lorsqu'il est très dur et assimilable à une pierre. Pour les bitumes mous plus ou moins chargés en matières minérales et/ou végétales utilisés en construction, étanchéité, comme colle, on enduit, jointoie, scelle, calfate ou on le moule pour en façonner de petits objets. Pendant longtemps, les fouilleurs vont

véhiculer la terminologie adoptée par leurs prédécesseurs sans trop se soucier de vérité scientifique. Ce sont ces mentions de pâte brune noire ou de pâte bitumineuse puis les travaux de Marshner, Dufy et Wright et les premières analyses d'Elf, datant de 1977 qui vont orienter notre propre recherche dans le sens d'un matériau artificiel.

Il n'en reste pas moins que les interrogations que nous avions soulevées dans le dernier chapitre du «Bitume à Suse…» seraient balayées si les analyses des récents échantillons naturels du gisement découvert au nord est de Suse s'avéraient conformes au matériau des objets. L'anse de la casserole *196*, les protomes d'animaux parfois très saillants des vases *197, 199 202, 203*, la coupe à la gazelle *213*, la coupe tripode *221* se conçoivent s'il s'agit d'une pierre. Les traces d'outils de sculpteur, l'absence de moules et d'exemplaires identiques, l'iconographie toujours différente, enfin la parenté avec des productions le plus souvent en pierre s'expliquent alors. La faible importance de cette production mais sa pérennité sur plus de trois millénaires si l'on tient compte des quelques objets trouvés dans les sites de Susiane antérieurs à la fondation de Suse, trouveraient enfin leur justification dans la présence d'un gisement peu important, difficile d'accès donc difficile à exploiter et dont on aurait exporté le matériau à titre exceptionnel en faible quantité.

Le terme mastic suggérant une manipulation artificielle, il nous faudra donc envisager de changer l'appellation du matériau de la collection de Suse pour écarter toute tentation d'amalgame avec les mélanges bitumineux simples. Cette pierre si particulière pourrait alors s'appeler tout simplement «roche bitumineuse» pour ne pas la confondre avec les calcaires ou les gypses bitumineux, si on ne veut pas utiliser le terme «kérogène» inconnu du grand public.

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Abstract

The very particular material of 500 artefacts from the excavations of Suse, kept in the Musée du Louvre, has been carefully examined with the help of the Elf Company. Analysis brought to the conclusion that it was an artificial mixture even when the artefacts bore the stamp of a sculpture work. Some months after the publication of the final study, geological samples gathered in the Susian area showed an identical structure to those of the archaeological samples. Thus, the hypothesis of an artificial material had to be revised.

The difficulty to identify the exact nature of this material, even by scientists, explains the variety of the names given by excavators to the artefacts when they discovered them: bitumen, black limestone, bituminous limestone, bituminous paste, brown or black substance, black asphalt, etc… Some of these terms brought back stone and sculpture work, others brought back mixture and mouldings in spite of their sculpture marks. It has led into a regrettable confusion between artificial mixture and natural rock. Thus, an unsharp terminology has been carried by excavators because of the unusual aspect of this material.

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OXUS TRUMPETS, CA. 2200 – 1800 BCE: MATERIAL OVERVIEW, USAGE, SOCIETAL ROLE, AND CATALOG

BY

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Introduction

Today trumpets[1] are known as musical instruments, but for most of their 4,000-year history they were signal makers[2] on account of their loud sound. According to Machiavelli, successful warfare required them[3]: "The general, then, should have his trumpets about him, since they are the proper instruments for inspiring the army, and since they can be heard farther than any other… [he] can immediately make his army understand when he would have it halt, advance, or retreat… by various notes and sounds he can acquaint them with all the different maneuvers" (1521, p. 108). Hunters, likewise, commanded extensive repertoires of signals (Halfpenny, 1953-4) which rang across fields. Beside conveying information, the piercing sound would "inflame the army and scare the enemy out of his wits"[4] and such awe-inspiring qualities may have given trumpets numinous associations[5]. At

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[1] Current terminology distinguishes trumpets, trombones, tubas and horns mainly on the basis of size. But visible differences are immaterial from the acoustical perspective and the designation "brass instruments" is inappropriate a millennium before this copper alloy was discovered. In every case, the sound is produced by vibrating lips which cause oscillations in the air column of the instrument tube. Long tubes produce low pitch, short ones high pitch. Some obvious features, like differences in the folding of the tube, have little effect. Current brass instruments can change tube length by mechanical devices (slides and valves), but the earliest trumpets had fixed length and straight shape. Yet, several pitches could be produced by overblowing. The parts of an Oxus trumpet are defined in fig. 1.

[2] Efforts to make trumpets adequate for "proper music" began as recently as 1600 CE (Tarr, 1988, pp. 85-90).

[3] For Greek war trumpets, see Krentz, 1991 and Nordquist, 1996.

[4] Machiavelli, as quoted in Baines, 1976, p. 32.

[5] Seven trumpets will mark the end of the Christian world (*Rev.* 8) and *Isrāfīl*'s "Trumpet of Doom" (*ṣūr*) will do much the same for Muslims (Rippin & Knappert 1986, p. 86). J. Duchesne-Guillemin (1980, pp. 544-548) has proposed that *ṣūr* ultimately derives from

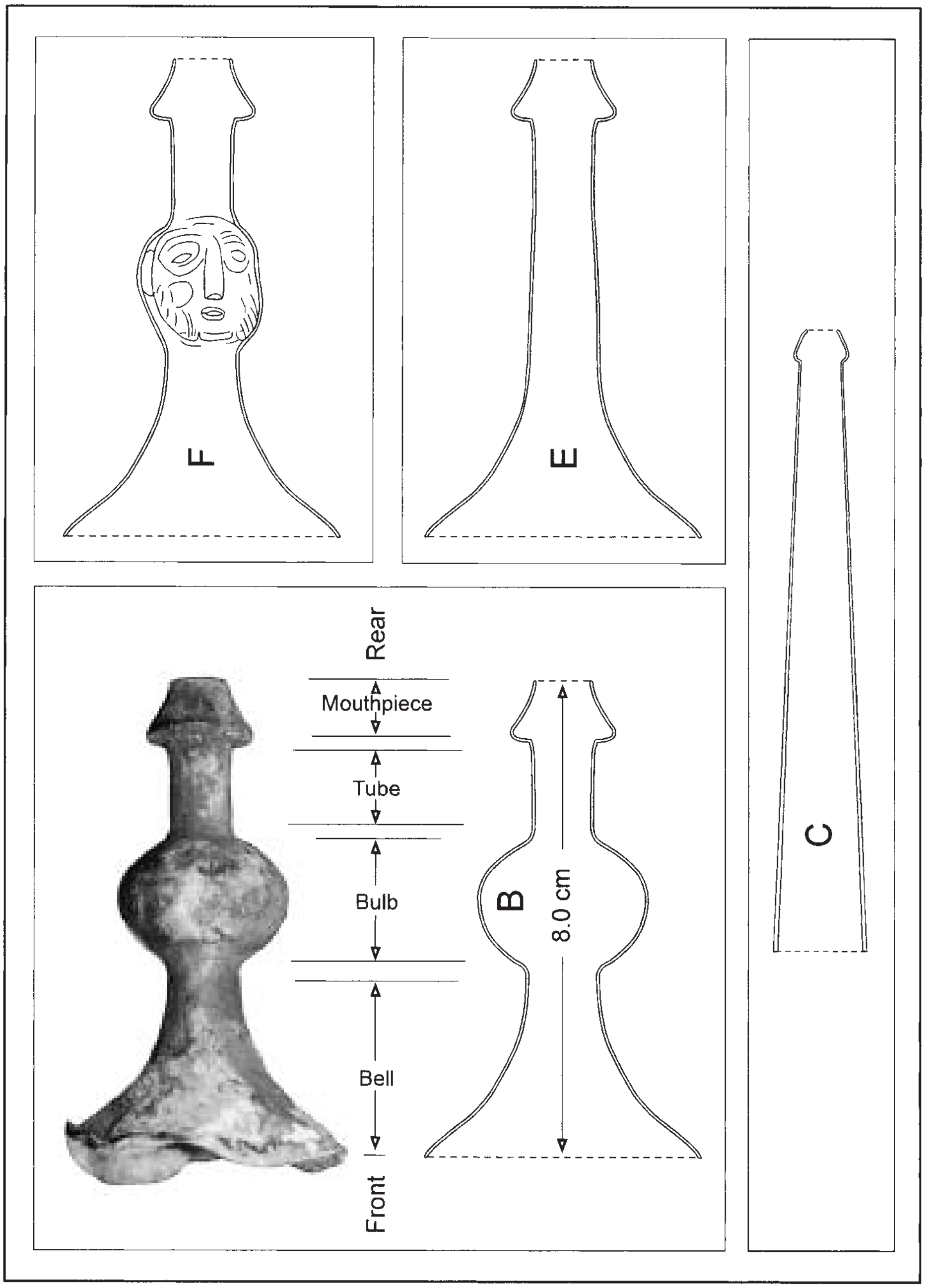

Fig. 1. Shapes and parts of Oxus trumpets. B = bulb trumpet; F = face trumpet; E = plain exponential trumpet; C = plain conical trumpet.

any rate, primitive versions, such as modified seashells[6] and animal horns[7], were often present in sacred rituals.

Oxus trumpets (fig. 1) differed significantly and occupied a niche usually not considered musical[8]. Still, they were true trumpets: the player's vibrating lips made the sound and the instrument's acoustical properties determined the pitch. Their short lengths (ca. 8 cm) resulted in high pitches and soft sound, a combination that rendered them useless for signals and music but enabled them to mimick animal calls.

During the 1970s many Oxus trumpets were looted from the desert region of southern Bactria and soon surfaced in the antiquity markets of Kābul[9]. Lacking stratigraphic information, their dates and context are lost, but their lineage had been established by their similarity to trumpets scientifically excavated at Iranian sites (Tepe Hissār [or Tappeh Hesār],

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suβrā-, the Avestan word for trumpet (see note 72 below). He surmised that the Apocalyptic trumpets entered the Bible as part of an eschatology borrowed from Zoroastrianism.

[6] A conch shell can easily be played if the narrow end is cut to provide a mouthpiece. Its sound is clear but the range narrow. The shells usually belong to the genus Charonia. Their distribution is world-wide (Jackson, 1917), and Sachs lists ethnographic documentation in Europe, Africa, Asia, South Pacific and America (1928, pp. 33-36). They are first documented in the Mediterranean, especially on Cyprus (Åström & Reese, 1990; Skeates, 1991; Evans, 1901, p. 142; Ridout Sharpe, 1991, pp. 76, 80; Montagu, 1981). During the Bronze Age a few shells were modified as trumpets. Modifications became increasingly common until the Iron Age when most shells are converted to trumpets (Ridout Sharpe, 1991, p. 83). The inside channel of a shell has the geometry of an equiangular spiral: as one proceeds toward the opening, the channel increases in breath at a steady and unchanging ratio, and forms a cone coiled up on itself (Thompson, 1942, p. 753). The conicity accounts for the good playing properties of shells: the tubes overblow in a perfect series of harmonics. Whereas the conical shape is acoustically important, the spiral is not. Conch shells have been put in religious service in tempered coastal regions around the world. In India it became an attribute of Viṣṇu. He is often shown holding a triton shell in his outstretched left hand (Stutley, 1985, p. 86).

[7] The *Shōfār* is made from one of the horns of a ritually killed ram or goat with the narrow end truncated to form a mouthpiece. Precursors were excavated on the Uluburun ship (ca.1300 BCE, Pulak, 1998), at Ugarit (Caubet, 1996, fig. 10) and at Tell Abu Hawam (Pulak 1998, p. 205). These were made of hippopotamus incisors carved into the shape of ram's horns and decorated with spiral patterns. Presumably, these imitated earlier undocumented trumpets made from such horns.

[8] In an earlier paper (Lawergren, 2001a, fig. 5) I used the name "Bactrian trumpets" because most trumpets had been found in southern Bactria, but it is now clear that both Bactria and Margiana (home of the Oxus Civilization) had plenty of trumpets, and they probably originated somewhere in that broad region.

[9] For photographs of landscape, looters, and bazaar, see Sarianidi 1986, pp. 18-20, figs. 2-6 and Ligabue & Salvatori, 1989, figs. 39-40.

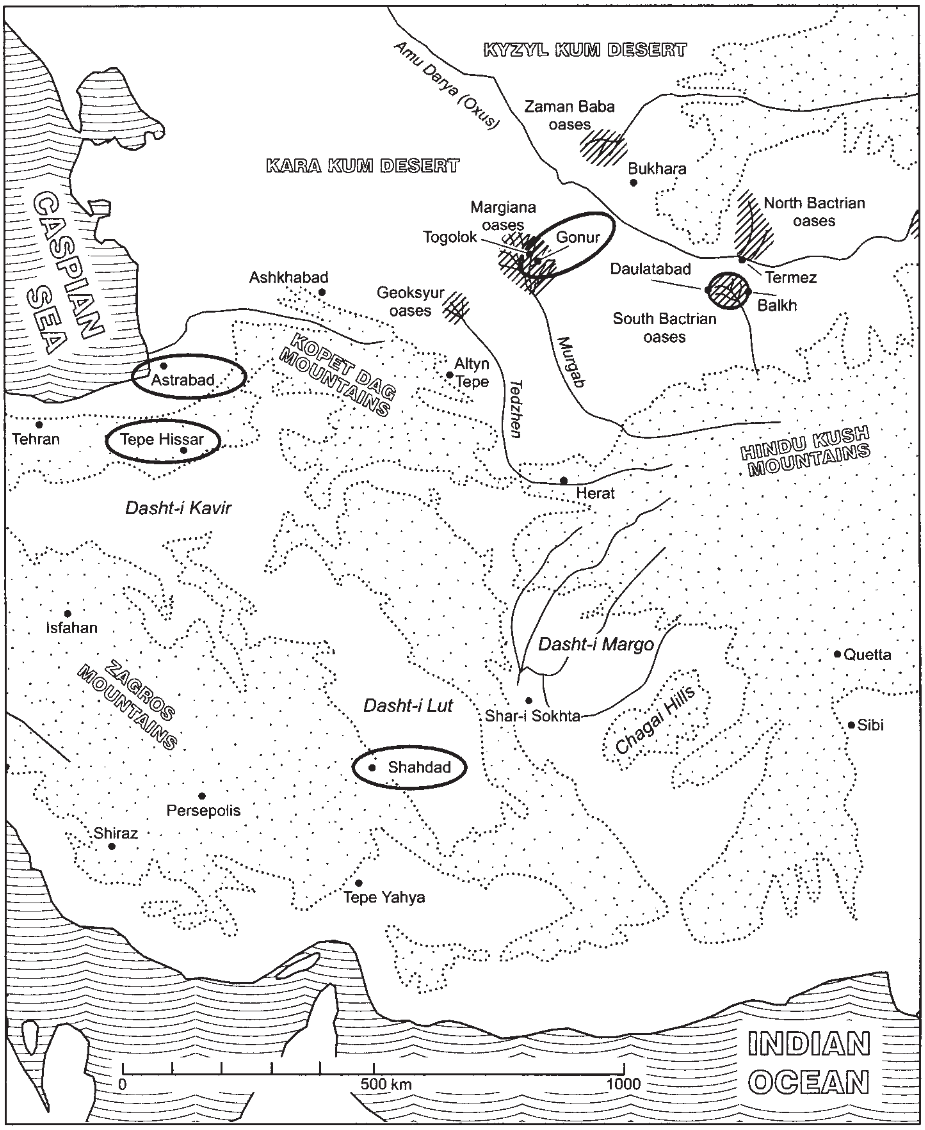

Fig. 2. Regions with Oxus trumpets. Dotted areas are 1000 m above sea level. Oval areas mark sites where trumpets have been found. Oasis regions are hatched.

Shahdād, and Astrābād). Since the latter are dated 2200 – 1800 BCE, this is also the likely period for the Bactrian corpus. Finally, removing any uncertainty, five trumpets were recently excavated at Gonur, a site in the region of Margiana, 400 km west of Bactria. All are similar to the

Bactrian corpus. Oxus trumpets predate other extant trumpets, such as those of Tutankhamun[10] (1350 BCE) and recently discovered examples of the proto-*shōfār* (1300 BCE, see note 7).

When the trumpets flourished, southern Bactria and Margiana were fertile regions irrigated by rivers flowing north from the Hindu Kush (fig. 2). Beyond the foothills the rivers spread into deltaic systems of rivulets and streams. The two principal systems are Margiana and Bactria, here collectively called the Oxus civilisation. It arose shortly after the middle of the third millenium and ceased a millennium later, possibly because of increased aridity (Hiebert & Lamberg-Karlovsky, 1992, p. 12).

Systematic excavations in Margiana, Bactria, and adjacent regions were started in the late 1960s by Soviet archaeologists and have been continued by Russian and international teams. They found that, for a relatively brief period (ca. 2200 – 1800 BCE)[12], sites in Margiana and Bactria contained similar objects, the "Bactria and Margiana Archaeological Complex" (BMAC). Hiebert (1994a, table 2) has discussed the emergence of objects (figurines, amulets, bone tubes, bone axes) characteristic of the complex. We add trumpets.

Recently, evidence for writing has been discovered (Klochkov, 1998, p. 173; Hiebert, 2001, p. 48), and the Oxus civilization is now increasingly seen as a culture approaching the level of complexity seen in early Egypt, Sumer, and Indus. One manifestation of complexity is the wide range of musical instruments in the two former regions[13] (2500 – 1500 BCE) but, so far, only trumpets and drums[14] are known in the Oxus (2200 – 1800 BCE),

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[10] The latter carry a dedication to Amun which implies they probably were used in the temple, not in the army.

[11] On the map (fig. 2) hatched areas represent clusters. Already Pumpelly's survey of 1908 showed the clusters (fig. 488), and Hiebert's map, drawn more recently (1994a, fig. 1), adds positions of excavated sites. For further discussion of geography, see Hiebert, 1994b, pp. 4-14 and Tosi 1989, fig. 3.

[12] Hiebert & Lamberg-Karlovsky, 1992, p. 5; Hiebert, 1994a, p. 374; Simpson, 1995.

[13] For recent discussions, see Lawergren 2001a and Lawergren 2001b.

[14] The Oxus drum is illustrated in fig. 30 (Francfort, 1994, fig. 6). It is a circular frame-drum of approximately 60 cm diameter, held with the vertical skin facing toward the side of the sitting drummer and played with a stick. Its shape resembles Mesopotamian drums of the same period (e.g., Rashid, 1984, pp. 68-73), but these were played with bare hands. Texts, however, mention drum sticks: in the ritual preparation of *lilissu* kettledrums the *kalū*-priest/musician is instructed to "wrap the drum-sticks [*sikkatu*] with fluffy wool and

while pipes[15], harps[16] and drums[17] are depicted in the Indus civilizations (2500 – 1900 BCE).

A search in museums, collections, and archives has yielded the 40 Oxus trumpets[18] listed in the appendix. They fall into three categories on account of shapes. Those with a bulbous expansion will be called bulb trumpets, and their catalog entry starts with letter B. Some, where the bulb is decorated with faces in relief (face trumpets), have entries beginning with F. The third category lacks bulb and face and is labeled E (plain exponential trumpets) and C (plain conical trumpets) depending on the curve of their contour (fig. 1).

1. Excavated trumpets of Oxus type

The eleven excavated trumpets in fig. 3 provide the most valuable material. Without them one could reasonably question the authenticity of the numerous Bactrian trumpets. But most features of the excavated set are

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cover it with varnish" (Thureau-Dangin 1920, p. 75 [French] and Pritchard 1969, p. 336 [English]). At the East Iranian site of Shahr-i Sokhta wooden sticks were found, apparently drum sticks (late third millennium BCE, Lawergren, 1997, columns 148-150).

[15] The player sits in a tree with a long musical pipe (ca. 50 cm) in his mouth. He holds it at 45° angle, pointing it toward an over-sized tiger (fig. 29b; Joshi & Parpola, 1987, seal M-478 B). The alternative interpretation — that the pipe is a blow-pipe (weapon) — is implausible (Gregory Possehl, private communication).

[16] A C-shaped pictogram was used in the Indus script (Mahadevan, 1977, nos. 311, 1046, 4680 & 4692). Several vertical lines were added inside the letter and, as a result, it looked like an arched harp. Considering the popularity of arched harps in early Buddhist iconography, and the mention of the instrument in Vedic texts (see note 99), the interpretation looks reasonable. A similar use of a musical instrument as a pictogram had already occurred in the early Sumerian script (ca. 2900 BCE) where the BALAG-sign depicted an arched harp or a drum (Lawergren, 1997, column 145, fig. 2b), and was to occur again in the Cretan hieroglyphic script with the harp as the sign (ca. 1700 BCE, Neumann, 1982).

[17] The Indus drum (fig. 29a) is illustrated in Vats (1940, seal number 306) and in Joshi & Parpola (1987, p. 209, seal H-182 A); another impression of the same seal is in Meadow & Kenoyer (1993, fig. 40.8h). A drummer faces an over-sized tiger, and his barrel-shaped drum is ca. 80 cm long, has drum skins of ca. 15 cm diameter at each end, and swells to 30 cm diameter in the middle. He plays it at both ends with bare hands. It is the first instance of the barrel-shaped drum frequently illustrated in India during the first century BCE at Sāñcī (Kaufmann, 1981, pp. 65, 66, 77) and continuing during the 1st to 3rd centuries CE at Mathurā (Kaufmann, 1981, p. 121), in Gandhāra (Kaufmann, 1981, pp. 141, 147 & 155) and Bactria (Lo Muzio, 1995, p. 245, fig. 16). A millennium later it is shown in Mysore (Blades, 1970, fig. 44).

[18] There are 43 items in the catalog, but three (nos. 14-16) may not be trumpets.

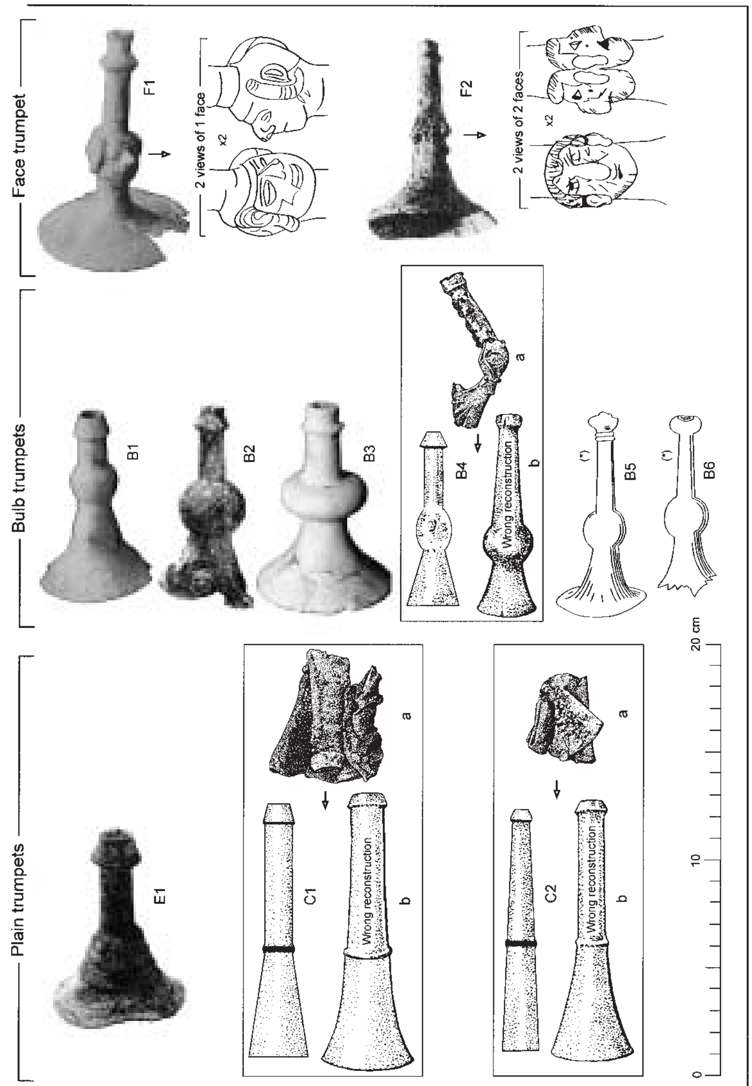

Fig. 3. Excavated trumpets displayed on the same scale — except those marked (*). — E1. Gonur (Margiana). Excavation and photo: Sarianidi (Spring 2001). — C1. Tepe Hissār (Iran). Author's reconstruction based on the photo in fig. 5. — a. Drawing of the squashed trumpet as originally found. — b. Excavator's surmised restoration. — C2. Tepe Hissār (Iran). Author's reconstruction based on fig. 5. — a. Drawing of the squashed trumpet as originally found. — b. Excavator's surmised restoration. — B1. Gonur (Margiana). Excavation and photo: Sarianidi (Spring 2001). — B2. Gonur (Margiana). Excavation and photo: Sarianidi (Spring 2001). — B3. Gonur (Margiana). Excavation and photo: Sarianidi (October 2001). — B4. Tepe Hissār (Iran). Author's reconstruction based on extant trumpet in fig. 4. — a. Drawing of the squashed trumpet as originally found. — b. Excavator's surmised restoration. — B5. Astrābād (Iran). Drawing: de Bode (1844). — B6. Astrābād (Iran). Drawing: de Bode (1844). — F1. Gonur (Margiana). Excavation and photo: Sarianidi, Spring 2001. Two views of the face are shown doubly magnified. Drawing: author. — F2. Shahdad (Iran). Drawing by Hakemi (1997, p. 635). The faces are doubly magnified.

also present on the unexcavated material, and the correspondence eases our concerns. The excavation sites are marked in fig. 2.

1.1. Gonur. The fact that the site is large and contains a palatial structure has led to the surmise that Gonur was the capital of Margiana around 2000 BCE. Because of its extensive remains, the region has been called a Mesopotamia-in-miniature[19]. The citadel and its central palace at Gonur South has received much attention (Sarianidi, 1994, pp. 388-391), and recently the excavations have moved on to the large cemetery (ca. 200 meters by 200 meters). Many tombs were looted in antiquity (Sarianidi, priv. comm., 2001; Salvatori 1994, p. 22; Salvatori 1995, p. 11; Cremaschi 1998, fig. 7), but a considerable amount of goods still survive. Of about 3,000 tombs investigated by Sarianidi, five contained one trumpet each (B1- B3, E1 & F1 of fig. 3), but lacked skeletons. Such tombs with grave-goods but without a body ("cenotaphs") leave no information on the gender of the trumpeters but, according to Sarianidi, the associated goods are typical of male tombs. In spite of extensive excavations, no trumpets have been found in the citadel. They appear to be restricted to tombs. One could, in principle, make more precise dating of the trumpets, for the tombs contain material from two district phases: (1) Middle Bronze Age, 2200-1900 BCE an (2) Late Bronze Age, 2000-1750 BCE (Hiebert 1994b, p. 80). Each phase had distinct ceramics (Hiebert 1995b, pp. 39-73), but the ceramics in the trumpet tombs have not yet been analyzed.

Two trumpets are made of copper, two of silver, and one of gypsum (or its fine-grained variety, alabaster). The latter medium is unique as trumpet material but otherwise common in the BMAC[20]. The three bulb trumpets are typical, but the single plain trumpet has an unusual combination of conical and exponential shapes. The face trumpet is also typical (fig. 24).

1.2. Shahdād. Copper[21] trumpet F2 was found in grave no. 081 (item 0787) which also contained two other copper objects (dagger, bowl) and 11 ceramic jars (Hakemi, 1997, pp. 245-6, 635). The skeleton had disintegrated

[19] Sarianidi, private information November 20, 2001.

[20] Hiebert, 1994a, p. 375. In Shahdād gypsum was used for beads (Hakemi, 1997, pp. 657), and at Tepe Hissār IIIC for figurines and vases (Schmidt, 1937, pp. 188, 215, 217). The material was common in Mesopotamia, e.g. at Ur during Early Dynastic I and II: bowls, cosmetic vessels, and ornamental stone (Moorey, 1994, pp. 45 & 83).

[21] Copper objects at Shahdād contained considerable amounts of arsenic and perhaps up to 10% tin (Hakemi, 1997, p. 59), but nothing specific is said about the trumpet.

so, again, the player's gender cannot be determined. The site has been dated broadly: Hakemi (1997, pp. 76-77) gives 2700 – 2500 BCE, Hiebert & Lamberg-Karlovsky 2300 – 1700 BCE (1992, p. 8), and Salvatori & Tosi 2500 – 1800 BCE (1997, p. 123).

The photo reproduced in fig. 3, the only one known, shows a flaring trumpet with the reliefs of two male faces mounted back-to-back near the middle. Because the metal is badly corroded, one cannot discern facial features clearly and must rely on Hakemi's rough line-drawing reproduced below the photo. It is hard to know which marks represent shadings introduced by the modern artist and which are actual lines in the metal. Those on the chins may indicate a beard and those on cheeks scars. But gross features are obvious: both faces have larger noses and coarser features than the Gonur face.

1.3. Tepe Hissār. Erich Schmidt began excavating Tepe Hissār, 280 km east-northeast of Tehran, in 1931. During the second season he found trumpets B4, C1 and C2 (figs. 3-5; Schmidt, 1937, p. 210 & fig. 121; Schmidt, 1982, figs. 17 & 31). They belong to Hoard I found on the Treasure Hill in stratum IIIC, a level dated 1900 – 1800 BCE[22]. Being part of a treasury[23], they may have been old when deposited, but this added uncertainty in age is hardly significant considering the general uncertainty in dating the site. According to the report, two trumpets were made of silver and one of gold. All were crushed nearly flat by earth pressure, but those of silver had also been sharply folded before deposit (in fig. 3: C1a & C2a; fig. 5), an act that would have rendered them unplayable. The excavation report shows no other folded object, so the "killing" was specific to the trumpets. It did not occur at other trumpet sites, but similar destruction took place at Ur (2450 BCE), when silver pipes were folded into three overlapping sections[24]. Because the trumpets were part of a treasury, there were no associated skeletons, and the trumpeter's gender is uncertain.

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[22] C^{14} date cited in Schmidt, 1982, p. 26. Also Dyson & Howard, 1989, p. 57 (2150-1885 BCE). Schmidt (1937) gives only vague dates. In a letter written July 26, 1951 to Bella Weitzner at The American Museum of Natural History, New York, he called level IIIC "2000 +/-."

[23] Many objects in the hoard are related to BMAC (Sarianidi, 1998, fig. 70).

[24] Lawergren, 2000, 123-4. Bronze lurs, which flourished 1300 – 600 BCE in the south-western region of the Baltic, are sometimes also said to have been wilfully destroyed. They had a full length of 150-225 cm and could be disassembled at several joints. Most were found in fragments, but the breakage was probably a result of natural erosion rather than an act of wilful destruction. Indeed, they seem to have been carefully disassembled before burial (Broholm, et al., 1949, p. 69).

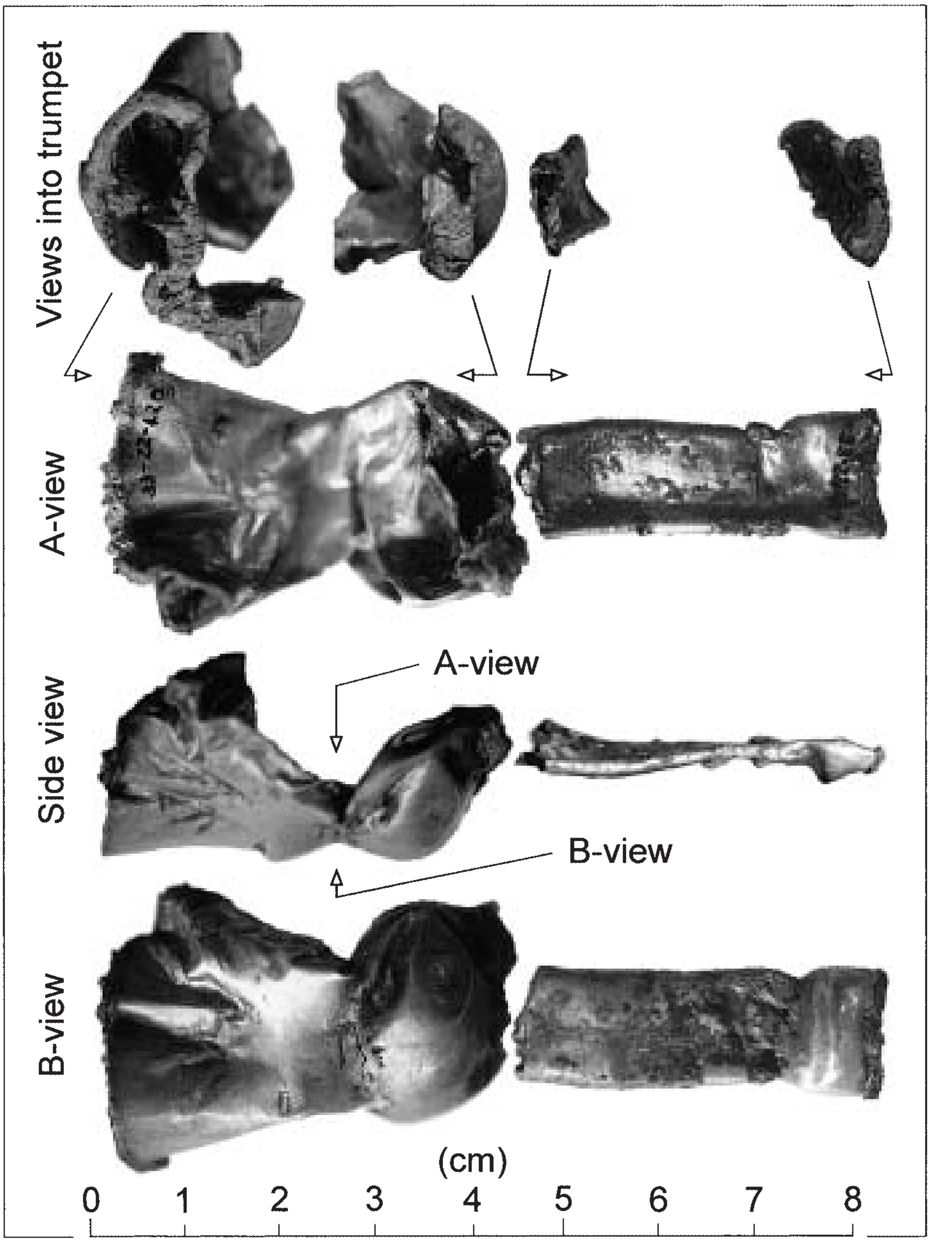

Figure 4. Gold trumpet from Tepe Hissār (B4) viewed from several directions. The slim side-view is seen from the top (the "A-view") and the bottom ("B-view"). At the top are views taken in four directions along the axis of the instrument. Photos: author.

Until now only a one-page picture (1937, p. 121; scale 3:4) has been published, and Schmidt's remark "[they are] problematic devices of silver and gold… [which] remind one of signal horns, since they are open at either end" (1937, p. 210) has remained the last word for 66 years. But the report is confusing, e.g., the inventory (1937, p. 424) lists sizes, materials, and "present location" at variance with the information on the one-page picture (1937, fig. 121) and in the museum records. To compound the difficulties, the two silver trumpets can no longer be found — but the gold trumpet (fig. 4) is in the University of Pennsylvania Museum of Archaeology and Anthropology in Philadelphia (formerly called The University Museum, Philadelphia), although it was said to have been deposited in Tehran (table 1). Fortunately, the archives of the museum hold two informative, unpublished, documents. The first is a photograph (scale 1:1) of several silver trumpets and the second is the original of the one-page picture (now scaled 1:1). Both are reproduced in fig. 5. They cause a revision of the dimensions[25] (table 1).

None of the trumpets were ever restored, but the excavator, who thought "their original form is clear," published drawings of his conception (all labeled b in fig. 3) together with the squashed originals (labeled a). But, as discussed below, new drawings introduced here give better agreement with the shapes in fig. 4 and 5.

1.3.1. Gold trumpet. Trumpet B4 is made of gold in a single seamless piece, apart from the midpoint break already present in the earliest illustrations (fig. 3: B4a). Since the break has jagged edges and a bad fit (fig. 4), it may also have been deliberately broken before the burial. Although squashed after the burial, one side of the bulb still retains its semispherical shape, and the bell still flares. The three sections (bell, bulge, and tube in fig. 4) are well articulated[26].

A modern coat of varnish covers the gold surface (ca. 0.5 mm thickness), but does not touch a thick whitish-gray layer partly filling the inside

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[25] To estimate tube diameters, the observed width of the flattened tube should be reduced by the factor $2/\pi$ to account for the restored three-dimensionality.

[26] The view in the excavation report (reproduced as B4a in fig. 3) is incorrect: it gives the side-view of the bell and the A-view of the tube. Moreover, Schmidt drew a conical tube although the extant fragment is cylindrical.

Table 1. Data on Tepe Hissār trumpets. Lengths in cm.

Designation in the present catalog	B4	C1	C2
FROM THE EXCAVATION REPORT (Schmidt, 1937, p. 210, fig. 121)			
Museum inventory number	H 3224	H3225	H 3226
Material shown in fig. 121	Gold	Silver	Silver
FROM THE INVENTORY IN THE EXCAVATION REPORT (Schmidt, 1937, p. 424)			
Location and field number material	Tehran Silver	UM 33-22-420 Silver	UM 33-21-892 Silver
Length	7.1	6.3	4.1
FROM A DRAWING AND A PHOTO IN THE UNIVERSITY MUSEUM:			
Material shown on the drawing Length on archival photo — here fig. 5 (top)	Gold –	Silver 12.0 ± 0.4	Silver 11.9 ± 0.5
Length on archival drawing — here fig. 5 (bottom)	8.7 ± 0.2	11.9 ± 0.3	12 ± 1
Length on published drawing — here labeled "a" in fig. 3	8.6 ± 0.3	12.1 ± 0.4	13 ± 1.5
Length on published drawing — here labeled "b" in fig. 3	9.3 ± 0.1	12.7 ± 0.1	11.9 ± 0.1
Best estimate of lengths		12.0 ± 0.4 *	11.9 ± 0.5 *
OBSERVED ON EXTANT OBJECTS IN THE UNIVERSITY MUSEUM			
Location and field number	UM 33-22-420	Unknown	Unknown
Material	Gold & Silver	–	–
Length	7.4 ± 0.2 *	–	–

UM = University Museum, Philadelphia (old name) = University of Pennsylvania Museum of Archaeology and Anthropology (current name). * = accepted lengths.

of the gold shell (visible in the cross-sections at the top of fig. 4). PIXE analysis[27] proves it to be silver chloride, the only surviving evidence of an

[27] Proton Induced X-Ray Emission Spectroscopy gave the following levels: silver 95.3%, copper 0.41% (added to make the silver less brittle, according to Stuart Fleming, private communication), chlorine 3.4% (causing heavy corrosion), and bromine 0.7%. There were trace levels of elements such as iron, aluminum, and silicon — probably contaminants from the soil.

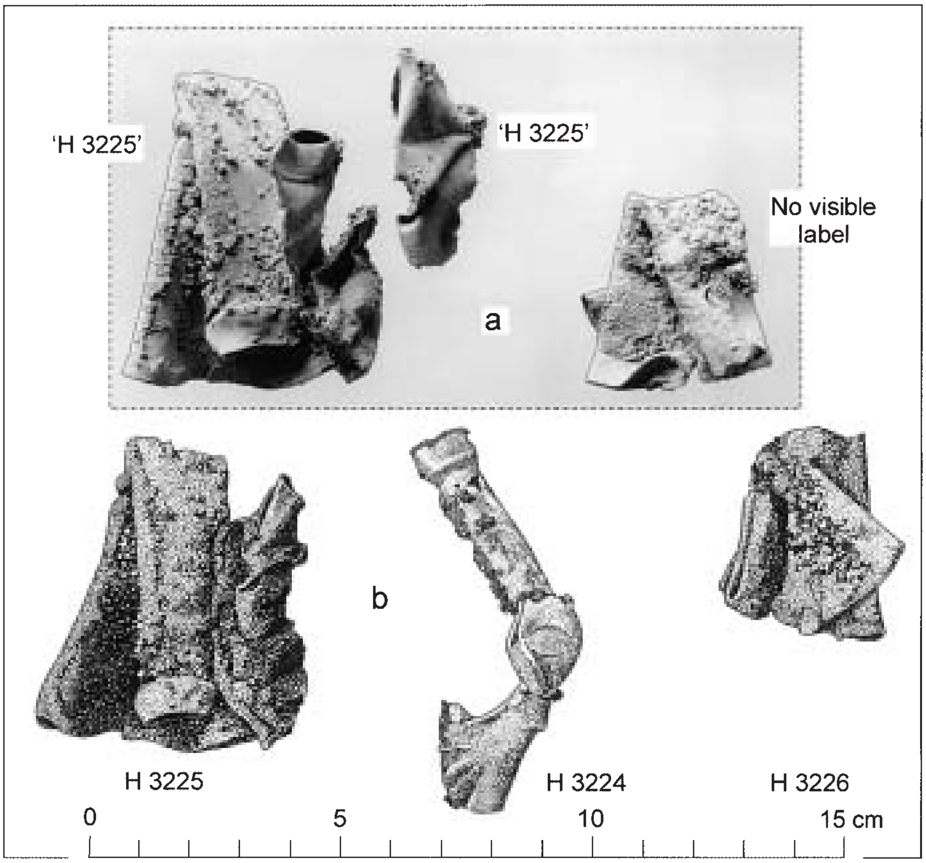

Figure 5. Original images of the Tepe Hissār trumpets (from the archives of University of Pennsylvania Museum of Archaeology and Anthropology).

a. The photograph (PE 2338) inside the dashed-line frame shows three (?) silver trumpets which no longer are extant. The caption "1/1" has been handwritten on the photo, and the labels "H 3225" and "H 3226" have been typed below the objects at the left and right side, respectively. The objects themselves show handwritten labels: H 3225 is written on both the left-side and the middle objects. The right-most fragment carries no visible label. Presumably, it was written on the down-turned side.

b. The original image (scale 1:1) published (in scale 3:4) in the lower part of fig. 121, Schmidt, 1937.

inner trumpet made of metallic silver. What Schmidt called a gold trumpet was, in fact, a double trumpet: a gold trumpet surrounding an inner silver trumpet.

Schmidt's drawing of the surmised pre-burial shape is inaccurate on two accounts: (1) the extant tube has parallel sides (fig. 4), not expanding as in the drawing, and (2) the extant mouthpiece is shaped like a truncated cone (lower half seen at the right end of the side-view of fig. 4); the same shape is present on other excavated trumpets (B1 & E1, fig. 3) and on most unexcavated ones (e.g., B7, B9-B18 & fig. 7).

1.3.2. Silver trumpets. According to museum records, the University Museum was given one silver trumpet, but it can no longer be found and may have crumbled and been discarded[28]. In the absence of any surviving silver trumpets, I use the archival photograph to estimate the lengths of the two trumpets (12.0 ± 0.5 cm) and conclude:

(1) Every side shown on the photograph (fig. 5a) is straight, giving the trumpets cylindrical or conical bores — not curved as Schmidt drew them ("wrong reconstruction" in fig. 3). As far as one can see, the trumpet on the right in fig. 5a has a straight and continuous conical shape from the mouthpiece to the front end, whereas the trumpet on the left has a straight cylindrical tube between the mouthpiece and the ring-shaped center followed by a straight conical bell. I have drawn these shapes in fig. 3 (C1 & C2). This revision is important since the shapes now agree with the unexcavated plain silver trumpets (C3-C7 in fig. 6). Because the true Hissār shapes have not been known earlier, these unexcavated plain trumpets can not be forgeries based on the Hissār precedent.

(2) It is impossible to correlate all pieces on the photo (fig. 5a) and the line-drawings (fig. 5b), but some correspondences are clear: the large piece on the left (the label H 3225 is inked directly on the metal near the bell of the trumpet) is identical to the large trumpet drawn directly below (= C1a, fig. 3). But confusingly, the large piece has an additional fragment stuck to its right side (with mouthpiece in the photo [fig. 5a] but without mouthpiece in the drawing [fig. 5b]). In the middle of the photo there is a detached fragment ending with a bell (also labeled H 3225 on the metal near the bell). The additional pieces probably constitute one or two silver trumpets ignored in the excavation report.

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[28] As noted above, the silver in the gold trumpet has eroded severely and only survived because it was held in place by the well-preserved gold. On the other hand, the gold probably accelerated the erosion of silver, the baser metal.

(3) The piece (fig. 5a, right side) corresponds to the drawing directly below (H 3226), but viewed from the opposite side. There is no visible label on the photo, possibly because it was inked on the other side.

1.4. Astrābād. In 1841 the Shah in Tehran received "some ancient gold vessels and other curious objects" found in a mound near the town of Astrābād, 100 km north of Hissār (fig. 2). Three years later line-drawings were published (de Bode, 1844) but the objects soon vanished. Rostovtzeff republished and discussed the material in a review 76 years later. The original publication included (unreliable?) line-drawings of two gold trumpets (here reproduced as B5 & B6, fig. 3). No dimensions were published, but the total weight of both was said to be 5.5 oz[29]. According to de Bode they "resemble in miniature the trumpets used in Persia at the pavilion where music is performed at sunset in honor of the Shah," but Rostovtzeff (1920, pp. 17-18) rejected the idea: "I would rather suppose that they may have served as supports for spherical or egg-shaped objects, recalling the support for the egg-shaped engraved vessel of Entemena[30]. I cannot point to anything analogous to these trumpet-shaped objects. (They might also suggest the notion of covers for the ends of the short staffs on which the mace-heads were fixed.)" The finds from Astrābād are now thought to have come from the large archaeological site of Tūrang Tepe (Wulsin 1931, p. 2, and 1938, p. 2, and 1938, p. 163).

The two Astrābād trumpets have the same flaring bell, spherical bulb, cylindrical tube, and mouthpiece as the Gonur and Hissār instruments. One trumpet has a pair of rings near the mouthpiece (B5, fig. 3), a feature resembling the single ring on each of the two plain trumpets at Hissār. The mouthpiece of the other (B6, fig. 3) looks different from the norm, but it may just have been badly drawn in 1844.

1.5. Shapes. We distinguish three types of excavated trumpets:
1.5.1. Plain trumpets, exemplified by copper and silver trumpets at Gonur and Tepe Hissār, have fairly straight tubes, some of which flare more at the front than at the back. Indeed, some of the rear tubes are cylindrical

[29] No errors were given, but the printed numerals probably imply an error of at least 0.2 oz. This weight corresponds to a mass of 156 ± 6 grams but, since one of the trumpets is a fragment, the initial mass would have been higher, perhaps 190 ± 20 gram.

[30] For a view of this vessel which entered the Louvre in 1896, see Caubet & Bernus-Taylor, 1991, p. 21. It was dedicated by prince Entemena of Lagash, ca. 2400 BCE. The egg-shaped silver vessel (ca. 30 cm high) rests on a low ring-shaped copper base a few centimeters high. The arrangement bears little resemblance to Oxus trumpets.

while the front is conical. With their various amounts of flare and differing lengths, this type exhibits the largest internal range of shapes. Each mouthpiece is fashioned into a short truncated cone expanding toward the front. The only decorations are rings in raised relief near the midpoint.

1.5.2 Bulb trumpets are made of gold at Hissār and Astrābād and silver at Gonur. Their bodies are patterned on the shape of a plain trumpet with a rapidly expanding bell at the front, but a nearly spherical bulb is added at the mid-point. The only rings are those at the rear end of an Astrābād trumpet.

1.5.3. Face trumpets were found at Gonur and Shahdād with one and two faces, respectively. Like the ball on bulb trumpets, the protruding faces create a nearly spherical volume at the trumpet's mid-point. All three faces are male and, at least at Shahdād, have beards and scars. Faces are upright when trumpets rest on their bells.

1.6. The ratio of "trumpets per tomb" at Gonur, Hissār and Shahdād and statistical uncertainties. At looted and undocumented sites, such as those in south Bactria, we know neither the total number of trumpets nor the total number of opened tombs, but three excavated sites yield such information (table 2) (As already stated, Gonur was partially looted, but for the sake of argument I shall briefly assume it was not. The quantitative effect of the looting will be discussed at the end of this section.). We wish to find the ratio between the total number of trumpets (N_{tr}) and total number of tombs (N_{to}) belonging to the period of the BMAC. The ratio R (= N_{tr}/N_{to}) would indicate the relative popularity of trumpets in the ancient population living at the site.

Table 2. Relative population of trumpets among excavated tombs.

Site	N_{to}	N_{tr}	σ_{tr}	σ_{tr}/N_{tr}	**R**	σ_R /R
Gonur	3,000	5	2.2	45%	0.0017	≈45%
Hissār (in stratum IIIC)	53	0	0	–	<0.019	–
Shahdād	375	1	1	–	0.0027	–

Because Gonur has the largest number of excavated trumpets, its data has the best accuracy. To estimate how much the value of N_{tr} would vary if the excavations were repeated at Gonur, and find the uncertainty this variation would introduce, we need to model the statistical distribution of N_{tr}. Trum-

pets are relatively uncommon: with 3,000 excavated tombs only 5 trumpets were found. Such low probability points to a Poisson distribution. As an illustration, assume that another lot of 3,000 tombs were examined. That lot would not necessarily contain $N_{tr} = 5$ trumpets, but another integer number close to 5. Repeated many times, the procedure would lead to a Poisson distribution of N_{tr} -values. Assume the mean of those N_{tr} -values is N_{av}, then the standard deviation (σ_{tr}) would equal the square root $(N_{av})^{0.5}$ (Bethea et al., 1985, pp. 59-63). Since the accuracy in N_{to} is high, the relative uncertainly in the ratio (σ_R /R) would be approximately equal to the accuracy in σ_{tr}/N_{av} [= $(N_{av})^{-0.5}$]. Table 2 contains the appropriate quantities.

Assuming $N_{av} = 5$, the relative uncertainty would be $1/\sqrt{5} \approx 1/2.2$ ($\approx$ 45 %). There is a 78 % chance[31] that the "true" N_{tr}-value would lie within the limit 5.0 ± 2.2 or that the "true" R-value is 5/3000 ≈ 0.0017 ± 45% (= 0.0017 ± 0.008). In other words, the Gonur data imply that one needs to excavate [1 / (0.0017 ± 0.008)] ≈ 600 ± 270 tombs to have a 78% chance of finding *one* trumpet. To have reasonable chance of finding a trumpet at Gonur, one needs to excavate at least 330 tombs, the lower limit of 600 ± 270.

Although Hissār IIIC has yielded several trumpets, none came from tombs. Since only 53 tombs were investigated in level IIIC (Schmidt, 1937, p. 233), we do not expect any if the ratio is the same as at Gonur. At Shahdād the required minimum number of tombs was exceeded[32] and one trumpet found. Since the ratio of trumpets-per-tomb appears to be consistent at the three sites, it is worth applying it to the looted Bactrian territory. About thirty trumpets in figs. 6-8 probably came from that region. That number would require 30/(0.0017 ± 0.008) ≈ 18,000 ± 8,000 looted Bactrian tombs. Unfortunately, this seems entirely plausible when we view the vast south Bactrian landscape pockmarked by looters in Ligabue & Salvatori (1991, p. 102).

If the assumption of no looting at Gonur was correct, the available data would imply a uniform density of trumpets at Gonur, Hissār, and Shahdād. But Gonur was looted, and the reality indicates that more trumpets were buried than accavated. Salvatori has suggested that 90 % of the tomb were looted (priv. comm 2002), a number that gives 10 times higher density of

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[31] Obtained by interpolation of the Poisson distribution f at a = 4, 9, 16, 25, where a is the mean value of each distribution (called N_{av} in the text). The following *Mathematica* program calculates the probability for a = 4: Clear(a, b, n); a = 4; b = Sqrt[a]; f[a_, n_] = N[(a^n)*(E^(-a)) / n!]; Sum[f[a, n], {n, (a-b), (a+b)}]. If we give high values to a, the probability approaches the value of 68.3% which coincides with the probability that an event falls within ± σ of the mean of the Gaussian distribution.

[32] In cemeteries A and B dated 2400-1700 BCE. Hakemi has a total of 382 tombs (1997, p. 555), but 7 (nos. 048-054) belong to cemetery C dated after the period of interest.

trumpets at Gonur than at Iranian sites. Although the percentage may be too high, it is clear that tombs at Gonur were much more likely to have trumpets than at Hissār and Shahdād. This circumstance fits our picture of trumpets originating in the Oxus civilisation.

2. Unexcavated Oxus trumpets

The looters worked in a narrow region south of the Amu Darya, bordered west and east by the cities of Daulatabad and Balkh near the provincial capital of Mazār-e Sharīf (fig. 2). Their finds began to appear in Kābul in the early 1970s (Salvatori & Tosi, 1997, p. 122) and continued until the Soviet invasion 1979, after which time I have seen no documentation. The lack of control brings uncertainties. I consider the material secondary. But it seems genuine because individual features are similar to those on excavated trumpets. Since the Kābul corpus is large, one expects a wide range of forms. Yet, all unexcavated trumpets adhere to the same distinct groups (plain, bulb, and face trumpets) as the excavated ones.

2.1. Trumpets documented in Kābul 1978-79. Pottier, while conducting field research in Kābul 1978-79, photographed 12 trumpets from south Bactria, and most of these are published here for the first time (figs. 6 & 7). The bulb trumpets (B7-B12, fig. 7) have the same cylindrical tubes, bulbs, and flaring bells as the excavated ones (B1-B6, fig. 3). Most mouthpieces have the same truncated conical shape. Trumpet B8 has a more cylindrical mouthpiece, but there is a precedent in the Shahdād trumpet.

Until recently, Pottier's examples of plain trumpets (E2-E6, fig. 6) seemed more problematic, but a recently excavated Gonur trumpet (E1) can now be taken as a precedent. Moreover, the ring on E2 is also present at Hissār (C1 & C2).

A copper object labeled "hollow tube" by Sarianidi (1989, fig. 6:10) is probably another bulb trumpet from the bazaar. Only the bell, ring, and bulb survive. The latter has a row of holes — random erosions rather than man-made finger holes.

2.2. Trumpets not documented in Kābul. A number of trumpets in Western collections are likely to have come from Kābul during the 1970s although not documented there. Few of them are published, and only one museum (the Louvre) collected them before 2001. One hopes that the lack

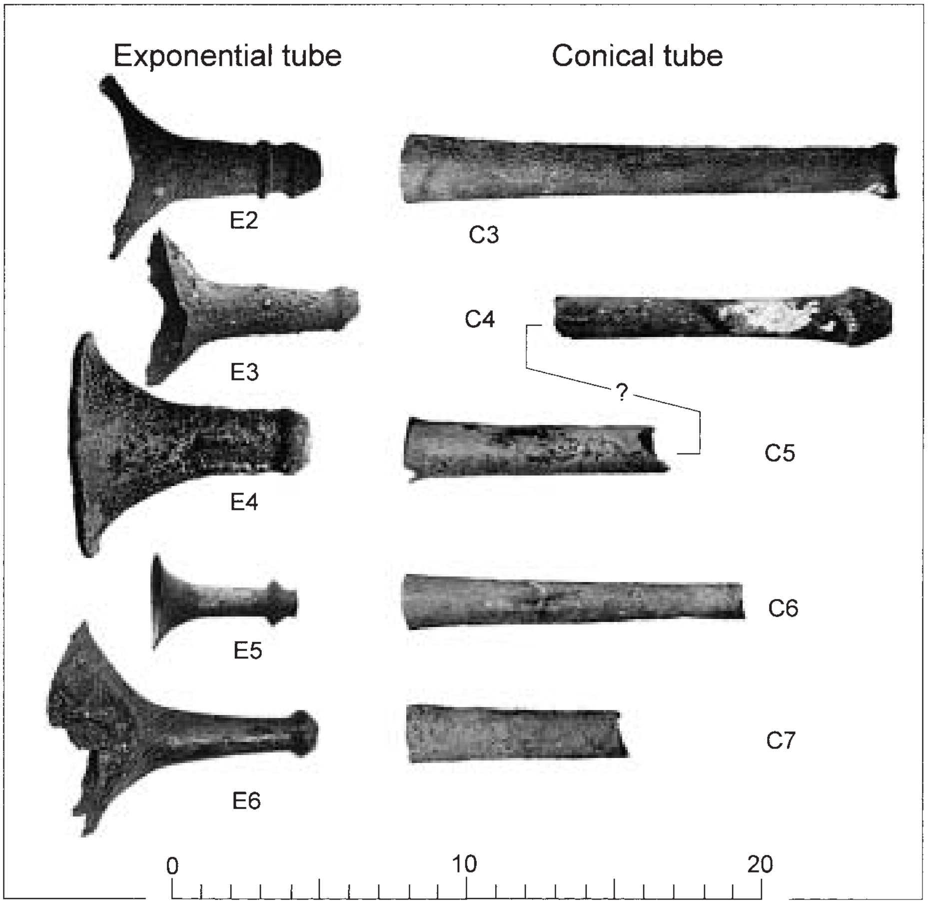

Figure 6. Unexcavated plain trumpets. Left side: Rapidly expanding (quasi-exponential) bore. Photos: Pottier. Right side: Slowly expanding (conical) bore. Photos: author

of illustrations and the mild interest from collectors have kept forgers at bay.

The Louvre trumpet collection was started in 1978 (references at item 6, table 1) with a plain trumpet[33] (E6) first photographed by Pottier in Kābul, and a bulb trumpet (B14). The collection expanded in 1997 with a

[33] According to the dealer who supplied the trumpet, it was found in a tomb with a copper arrow head. The latter was also acquired by the Louvre and given inventory number AO 26426 consecutive to that of E6 (item 6, table 1). The circumstances of the find cannot be independently confirmed.

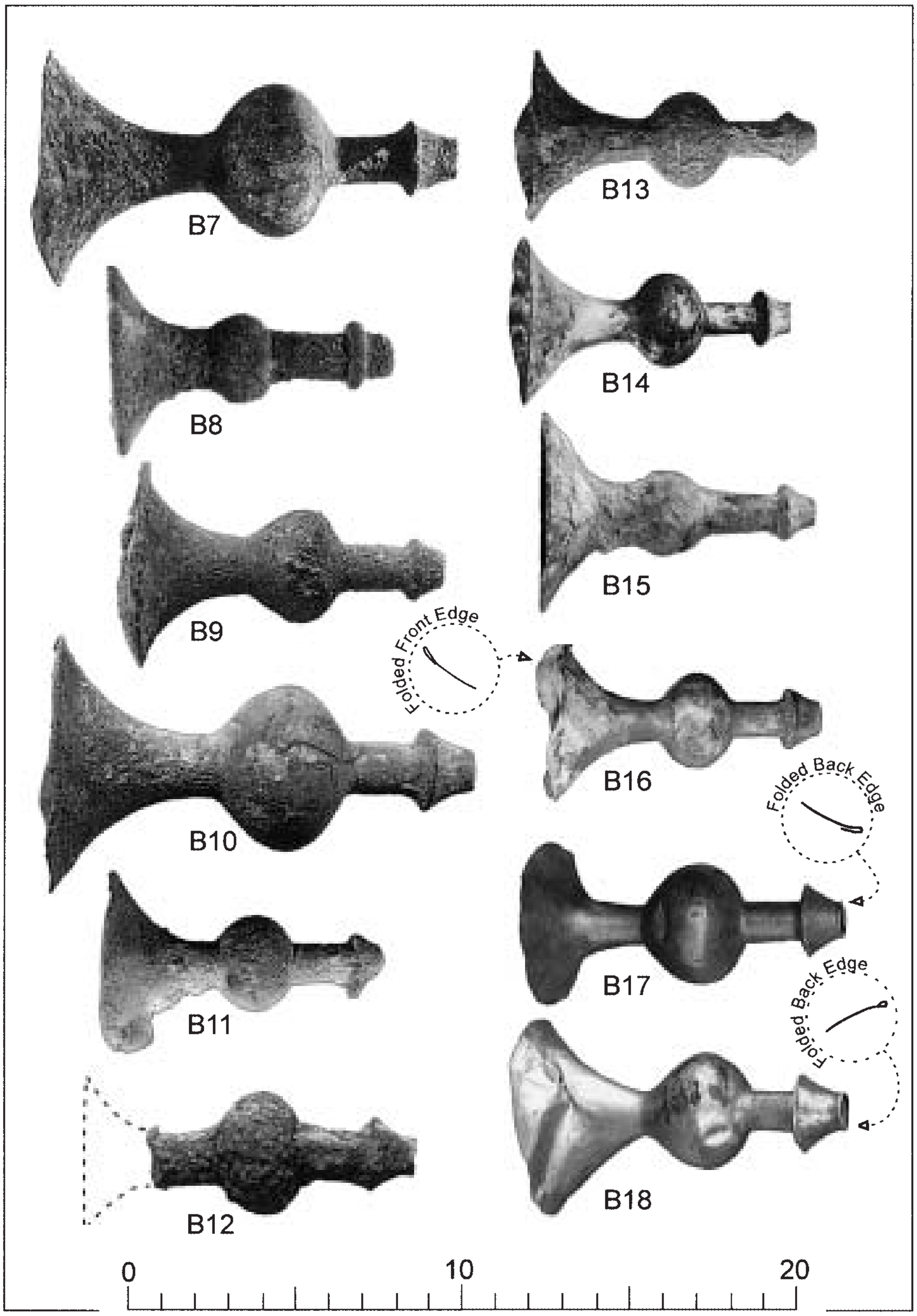

Figure 7. Unexcavated bulb trumpets. Inserts show the folded silver wall (twice magnified). Photos: Pottier, except B15 — B18 (by author) and B14 (Louvre).

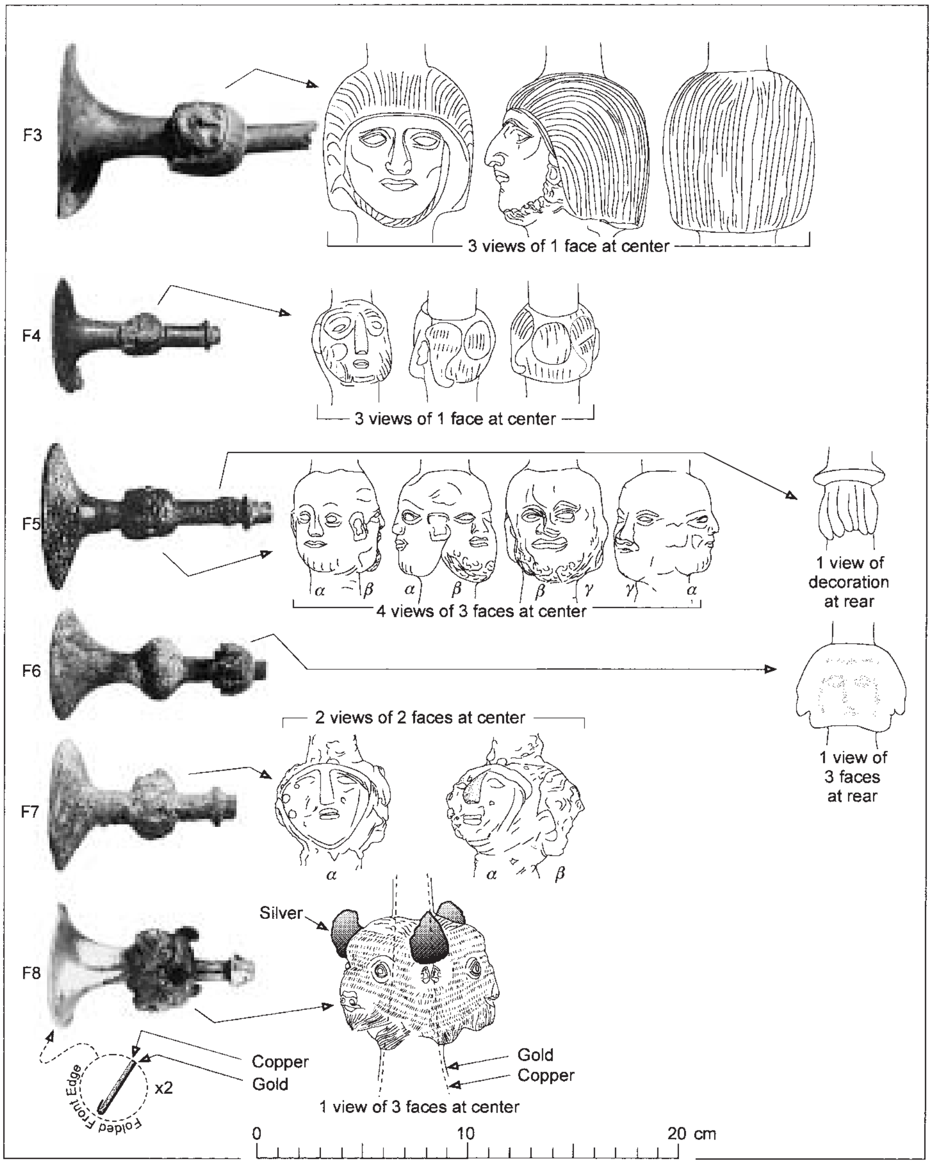

Figure 8. Unexcavated face trumpets

The photos in the left column are shown on the scale at the bottom. The line-drawings, given at double scale, show the faces from several directions. Faces located near the rear of the trumpet are placed on the right side and those located in the middle are put in the center. Drawings by the author. F3. One male face located near the middle. F4. One male face near the middle. F5. Three male faces (labeled α, β, and γ) placed near the midpoint with a decoration (mop of hair?) near the mouthpiece. F6. Three (?) faces near the mouthpiece. F7. Two male faces (labeled α and β) placed near the middle. F8. Three bison faces (all nearly identical) placed near the middle

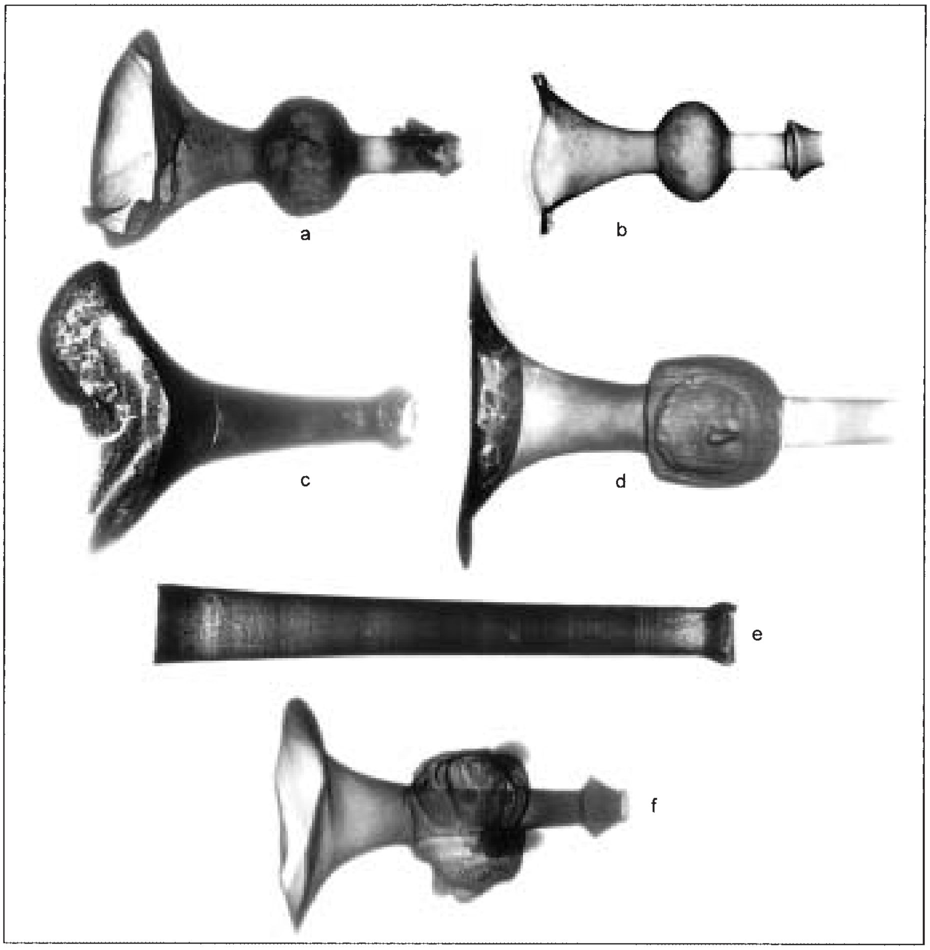

Figure 9. X-rays photos of representative trumpets. The images have been inverted to provide white backgrounds, i.e. dark pigmentation corresponds to thick materials.
(a) F9; (b) B16; (c) E6; (d) F3, where the shadow on the bell is caused by the bent front-edge of the bell; (e) C3; (f) F8, where the inner copper trumpet looks like a plain exponential trumpet, and the darkness of the horns indicates solid silver.

face trumpet (F3), and three years later with a batch of plain trumpets (C3-C7) and, perhaps, another face trumpet (F9).

A private collection in the USA was assembled during the 1980s (B15, B17, B18, F7 & F8). The latter is a finely sculpted gold trumpet (figs. 8-9, 11-13). Rumors about it circulated among scholars and dealers in Kābul

1978-9 and a snapshot was published[34] by Pottier (1984, no. 315). A US collector acquired two face trumpets (F4 & F5) in Kābul ca. 1978.

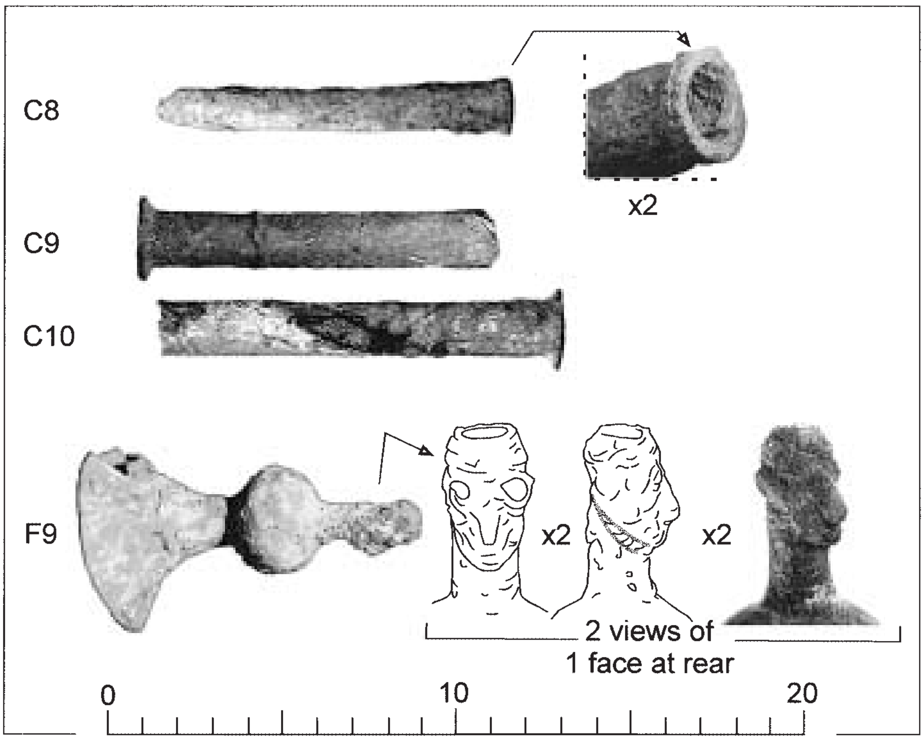

Figure 10. Problematic pieces.

2.2.1. Plain trumpets. The plain trumpets in the Louvre are exponential (E6) and conical (C3-C7) in shape[35]. Of the latter, only one is intact, but all have the slow conical expansion familiar from Hissār (C1-C2). The intact instrument is unusually long, 40 % more than at Hissār. The other conical trumpets are fragments, one (C4) being a rear-end and three (C5-C7) being front ends. Perhaps fragments C4 and C5 form one trumpet,

[34] Pottier saw an unclear photograph of this instrument in Kabul 1979, but the actual trumpet was not shown.

[35] According to unverified information from the dealer, the trumpets came from the same tomb that had the objects shown in Ligabue & Salvatori, 1989, figs. 74-78. One vessels contained beads of stone and gold and fragments of (dateable?) bones.

since both have matching diameter and thickness at the joint and similar high purity silver (> 90.5% with < 72% for the others: C3 & C6-C10) with little AgCl (< 1% while C3 & C6-C10 have 13-25%). If so, the composite trumpet would be 20 cm long.

2.2.2. Bulb trumpets. Shapes, dimensions, and materials of trumpets in Western collections (B7-B18, fig. 7) resemble those of excavated ones. The consistency of shapes is remarkable considering the vast geographical spread of this type. Generally, the workmanship is very fine. In several cases special attention has been paid to the edges: on silver trumpet B16 the front edge is folded — probably to add strength — and on gold trumpets B17 and B18 the same treatment is given to the rear of the mouthpiece.

2.2.3. Face trumpets. Excavated trumpets have produced three examples; the unexcavated material increases this number three-fold. The wider range of facial expressions offers a good basis for systematics. Most faces are placed near the mid-point of the instrument, but one is at the rear (F6, fig. 8). Trumpet F5 (figs. 8 & 20) combines both types: it has three faces at the mid-point and a relief (tufts of hair?) around the tube near the mouthpiece. Most mouthpieces, bells, and tubes have exact precedent among the previously discussed trumpets. However, the rear end of copper trumpet F3 (figs. 8 & 12) is missing. When complete, the trumpet must have been longer (> 12.2 cm) than other face trumpets but shorter than the longest plain trumpet (C3, 16.5 cm).

Gold trumpet F8 with three bison faces is supported by an inner core of thin copper, some of it cracked (fig. 17). The X-ray photo (fig. 9f) reveals a core shaped like a plain trumpet. The gold and copper layers (both 0.5-0.7 mm thick) are bound together by bitumen.

2.2.4. Problematic pieces. When trumpets C3-C7 were acquired, the four silver objects in fig. 10 were part of the lot. They may be trumpets, but the mouthpieces of C8-C10 deviate considerably from the norm, and their cylindrically shaped tubes add further concerns. The mouthpiece of C8 seems to be nothing but a solid ring added to the cylindrical tube (see the top right enlargement in fig. 10); on other trumpets it is part of the thin wall, beaten out to an integral mouthpiece (fig. 1). Moreover, a thin silver foil seems to have been inserted into the mouthpiece, while other trumpets lack extraneous pieces.

The rear ends of C9 and C10 are forced outward to form an annular ring. Although such flat mouthpieces are known on later oriental trumpets (Baines, 1978, fig. 12a), they are not found on other Oxus trumpets. The metallic composition of C9 and C10 is different from the others (having unusually large percentages of Cl and Br) but similar to each other (and C7), suggesting that they may have formed one piece. If so, the shape lacks parallels in the BMAC repertoire. However, there are other archaeological pipes without musical connections (e.g., Gautier & Lampre, 1904, fig. 300), and these silver pipes may just be another example.

Face trumpet F9 has a genuine bulb-shaped body, but the face near the mouthpiece may be a recent addition. Its heavily corroded silver surface looks genuine, but X-rays show a narrow unfilled slit[36] between the nose and the tube (fig. 9a). Apparently, the nose, eyes, and cheeks were not hammered out from the silver surface as on other face trumpets, nor were they soldered to the surface. There are two possible explanations: either the facial details were attached recently to enhance the value of an ancient bulb trumpet, or it was loosely attached in antiquity. In the latter case a thin film of silver chloride (ca. 2 %) may have seeped across the surface after burial and sealed the face into a package integral to the bulb trumpet. All items in fig. 10 are problematic, but none can be unequivocally condemned as a fake. Until further evidence comes along, I will disregard them.

3. Time, place, and origin

There are close similarities between BMAC objects in Margiana, Bactria, Hissār, and Shahdād (Sarianidi, 1998, figs. 69-71). For trumpets the correspondence extends across all types. Being part of the same cultural complex, their dates are similar. The geographical sphere includes the parts of Central Asia and Iran that has been called "outer Iran" (Amiet, 1989, p. 159; Frye 1993: 3). Short trumpets were characteristic of that region but existed nowhere else.

Did Oxus trumpets spread from Bactria/Margiana to the south or vice versa? Since the dates of BMAC overlap (Bactria/Margiana: 2000 – 1800

[36] The divergence of conventional X-ray beams result in smeared edges on images. But in this case the X-rays are diffracted by a Göbel mirror which produces a parallel and monochromatic beam capable of imaging the very narrow slit (0.3 mm) discussed here.

BCE; Hissār: 1900 – 1800 BCE; Shahdād: 2300 – 1700 BCE), they do not determine the direction of the migration. Because of the overlap, Amiet has called the phenomenon Inter-Iranian (1986) or Trans-Elamite (1997, p. ix) with no clear antecedent. But Hiebert & Lamberg-Karlovsky (1992, p. 10, also Lamberg-Karlovsky, 1997, p. 98) have argued that artifacts associated with BMAC originated in the north (Margiana and Bactria) and spread to the south (Iran). They showed that objects that later became associated with the BMAC had predecessors in the Oxus region. There they developed into BMAC artifacts following a "clear overall cultural continuity of ceramic and architectural traditions" (Hiebert, 1994a, p. 385). On the other hand, the BMAC was an intruder at Hissār, where a long stratigraphic sequence prior to the BMAC contains no material resembling that of the BMAC. The intrusion is less apparent at Shahdād because the site contains little material earlier than the BMAC. The authors proposed that the BMAC was carried by Oxus people who traveled south in search of raw material (the oases lacked indigenous supplies of large stones, semi-precious stones, and metals, Hiebert, 1994a, 376). Lamberg-Karlovsky (1994) emphasized that "the extensive migration of peoples of the Oxus Civilization to the distant regions of the Iranian plateau. This most likely took place… toward the end of the Margiana/Bactria archaeological sequence, ca. 1700 BC."

If we narrow the search for origins to trumpets, the sheer abundance in south Bactria, and the paucity elsewhere, seem to favor that region. But the analysis in section 1.6 indicates that Bactria had the same density of trumpets as Margiana, Hissār, and Shahdād, and none can claim precedence. We can only assume that trumpets followed the trend of the general BMAC material: they originated in the Oxus civilization and diffused into Iran. After 1500 BCE the BMAC disappeared from the archaeological records and with it the Oxus trumpet. Short trumpets were never played again[37].

[37] According to Baines (1978, p. 57), a Macedonian victory coin shows a short trumpet but it is, in fact, far longer than any Oxus trumpet. The coin (Ashmolean Museum, Oxford, no. 3243 and 3244, in *Sylloge Nummorum Graecorum: Ashmolean Museum*) is a silver tetradrachma with Nike standing at the prow of a ship blowing a 50 cm long trumpet (assuming the goddess has human dimensions). She celebrates Demetrius Poliorcetes' (306-283 BCE) victory over Ptolemy. The former was a Macedonian ruling parts of Asia Minor, and the coin was minted in Salamis. There is a similar coin in The Cleveland Museum of Art, no. 29.911.

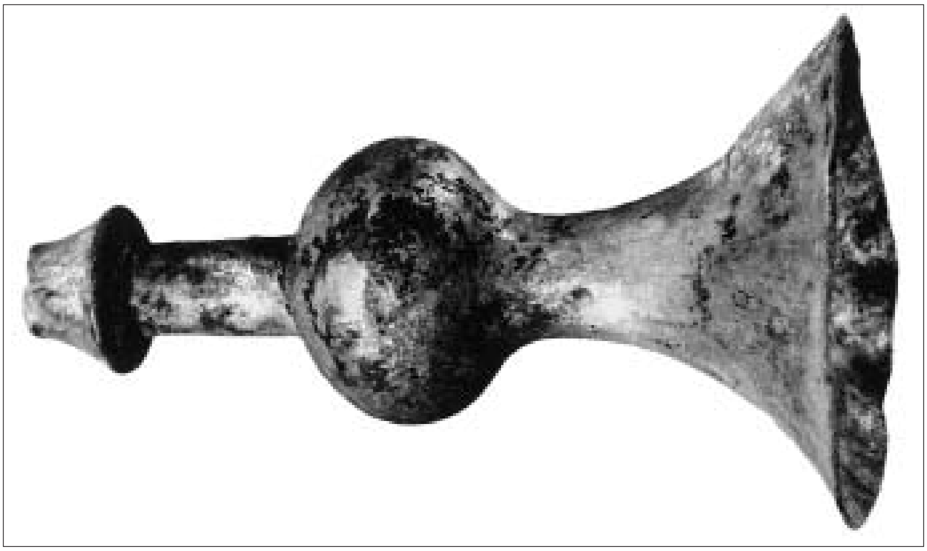

Figure 11. Trumpet B14. Photo: Musée du Louvre.

4. Systematics of shapes

Oxus trumpets differ in many ways from previously known trumpets. Their miniature size is unprecedented, and their use of precious materials unparalleled, but in common with any trumpet they have three distinct parts: flaring bell, narrow cylindrical tube, and mouthpiece. There is a profusion of shapes among Oxus trumpets, but all are variations of the basic three types in fig. 3. Because of the narrow range of types, we suspect the designs to have a specific purpose. For example, the bulbs look odd[38], but they have a definite acoustic function (Lawergren, 2003).

5. Systematics of mouthpieces

The rear-end of a typical Oxus mouthpiece has a sharp edge, see fig. 1. It would be uncomfortable, even dangerous, to push lips against it. On the

[38] The bulbous shape may have inspired the large spherical pommels seen on long Islamic trumpets some millennia later. These are frequently shown in Persian manuscripts as army trumpets (e.g. Robinson, 1976, figs. 102, 226, 237, 244, 248, 273, 278, 369, 394, 397, 1133). A shorter type with two bulbs became an heraldic Islamic sign before the Ottoman conquest (Mayer, 1933, p. 8, no. 20). Pommels reached the West at the time of the Third Crusade (ca. 1200 CE, Baines, 1978, p. 73).

Figure 12. Trumpet F3. Front view. Photo: Louvre.

Figure 13. Trumpet F3. Oblique view of the face. Photo: Louvre.

Figure 14. Trumpet F3. Side view of the face. Photo: Louvre.

Figure 15. Trumpet F8. Photo: author.

Figure 16. Closeup of trumpet F8. Photo: author.

Figure 17. Trumpet F8, showing the (chipped) copper layer inside the bell. Photo: author.

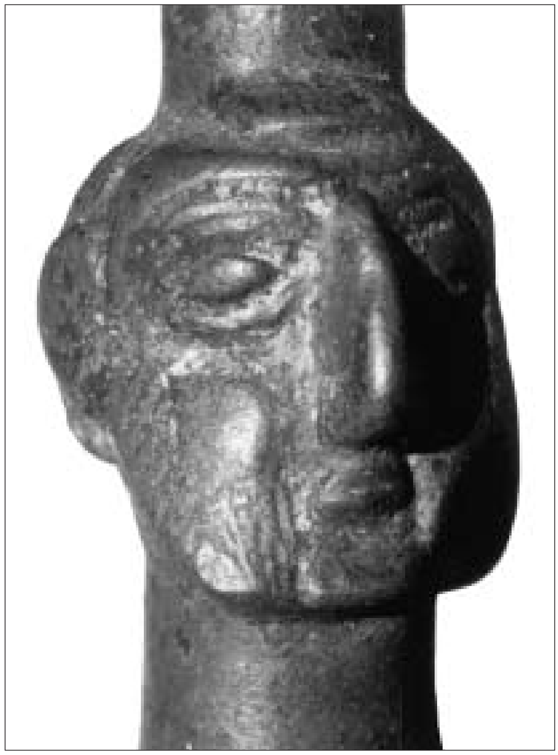

Figure 18. Closeup of trumpet F4. Front of face. Photo: Garner.

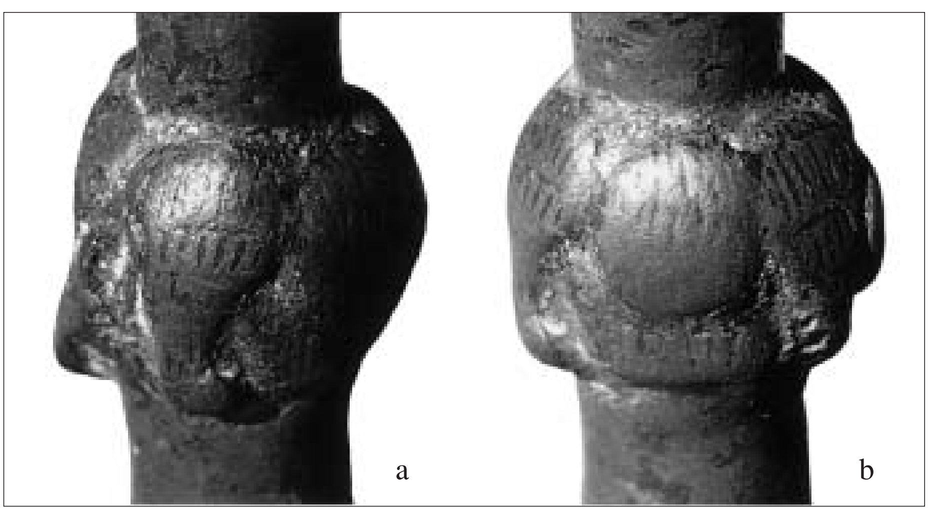

Figure 19. Closeup of trumpet F4. Back of head from two angles. Photo: Garner.

Figure 20. Trumpet F5. Photo: author.

Figure 21. Closeup of trumpet F5. The α-face (young man) is on the left. The β-face (old man) on the right. Photo: author.

Figure 22. Closeup of trumpet F5. Looking at the β-face (old man) with α and γ on the left and right, respectively. Photo: author.

Figure 23. Trumpet F7. Only the α-face on the left is recognizable. Photo: author.

Figure 24. Trumpet F1. Photo: Sarianidi.

modern trumpets, lips are, indeed, pressed against the mouthpiece, but it has rounded ends which act as cushions (fig. 27c). Obviously, one cannot put lips against the end of an Oxus trumpet, but a little experimentation shows the way. Instead of pushing against the edge, the lips ought to embrace the conical sides of the mouthpiece. Then the sharp edge of the pipe lies safely at the back of the lips causing no harm (fig. 27b), but allowing a thin sliver of the lip to vibrate.

This design disappeared with the demise of the Oxus trumpet and never returned. The mouthpiece on the next major type of trumpet, that of Tutankhamun (1350 BCE), was nothing more than the sharp end of the pipe broadened with a thin wire ring (Hickmann, 1946, p. 27). In 1933 only one note could be coaxed from the instrument, but six years later a modern mouthpiece was inserted and many notes became accessible (Manniche, 1991, pp. 76-7). Modern mouthpieces have cup-like design with rounded edges. These were first introduced 3,000 years ago on Scandinavian Bronze Age lurs[39] and few major changes have followed.

6. Systematics of faces

Oxus trumpets have one, two, or three faces mounted side-by-side (table 3). In the case of one face, all is visible, including hair at the back and ears at the side (F1, F3 & F4, figs. 8, 12-14, 18-19 & 24). In the case of multiple faces, there is no room for side-hair, and the ears merely serve to delimit each face (F5, F7 & F8, figs. 8, 15-16, 20-23). Only male faces occur. All are human except for a trio of bisons on one trumpet (F8).

Some faces are deftly sculpted. The subtle character and individuality of the portraits on F1, F3, F4, F5 & F8 (figs. 3 & 8) are unusual at this time and place and unexpected as decorations on trumpets. But some are badly corroded, e.g., F7 where two faces are obliterated and one face is only visible at favorable angles. Another (F6) is only known from a blurred photo, but Pottier states that there are three female faces (1984, p. 47). The triple-faced trumpet F5 (fig. 8) is partly corroded: two faces are clearly visible but a third (labeled γ) is only intelligible from some angles. The two clear faces are idiosyncratic and expressive enough to indicate age and character: the α-face is young and innocent-looking (figs. 8 & 21 left) and may have a beard; the β-face is old and worldly (figs. 8, 21 right

[39] See note 24.

& 22) with a definite beard. Both look quite harmless, but the face on F4 (figs. 18-19) seems more menacing with small sunken eyes framed by deep folds. His cheek bones are prominent, and a thin beard surrounds the lower part of the face.

Many faces have beards but seem to lack moustaches. The hair on top of the head is subject to individual whims: the thick hair on F3 (figs. 8, 12-14) fits like a helmet and the sculptor went to great lengths to show individual strands of the "page-boy" cut. The most unusual hairstyle adorns the head of F4 (fig. 19). It is neatly trimmed on the back and tied into oddly shaped patches with descending curls. (Perhaps F1 has a similar hair style at the back, see figs. 3 & 24). The three faces on F5 (figs. 8 & 20-22) have little or no hair, but it may have disappeared through surface erosion. One face is framed by ample top hair, thick side whiskers and a trimmed beard (F7, figs. 8 & 23). Such "mutton-chop whiskers" also decorate the face of F1.

Superficial scars are common. The face on F2 (figs. 3) seems to have multiple scars, and F3 has a long S-shaped furrow under the right eye and a shorter C-shaped one over the left cheek bone (figs. 8, 12-13). The cheeks of F1 seem to have long zigzag marks (possibly scars), and the brow is deeply furrowed.

One of the faces on F7 (fig. 23) has an arched nose and full lips, prominent enough to extend far outside the rough surface. Boldly arched noses also adorn F1 and F3 (figs. 3, 8, 14 & 24), with the former having a flattened tip. Face F2 has a protruding nose (fig. 3), but it is hooked rather than arched.

6.1. The bison trumpet. The artistic tour-de-force of the whole corpus is F8. Its gold surface is hammered to form three bison faces in deep relief (figs. 8 & 15-17). The typical features of a bison are emphasized: it has a broad face covered by medium-lenght hair, a long goatee under the chin, and long hair at the top between the short horns. Here the horns are made of silver inserted through holes in the gold face. The whole contraption is put outside an inner, plain, copper trumpet (fig. 9f). The trumpet qualifies, by any measure, as a masterpiece of ancient art.

But there is a problem with bisons in Bactria[40]. The Eurasian bison (*Bison bonasus*) is considered not to have lived further east than the

[40] Where it must have been found, see note 33.

Caucasus in historical times (Grzimek, 1990, p. 405; Vereshchagin & Baryshnikov, 1984, p. 502)[41] although, at much earlier times, members of the genus *Bison* had spread across the temperate zones of Eurasia. But it has recently been shown that a small type of *Bison priscus* survived in the Don basin and west of Lake Baikal until a millennium ago (Vereshchagin & Baryshnikov, 1984, p. 502). The two sites lie on the Russian steppe, far north of Bactria. But the trumpet shows that bisons must have lived much nearer Bactria four millennia ago, and a copper plate from Shahdād (ca. 2000 BCE) seems to represent a bison (Paillet, 1999, Fig. 11). Apparently, the climate at the time of the BMAC had created an oasis environment satisfactory to bisons.

6.2. Face comparanda. The best known source of comparative human faces is a set of chlorite statues from Bactria/Margiana or northeastern Iran[42]. They are approximately contemporary with the trumpets. In common with most trumpet faces, they have beards, scars, and lack moustaches (fig. 25), but these features are more emphasized than on trumpets. Whereas the scars are deep gashes on the statues, they are merely cosmetic blemishes on the trumpets. The beards are wild and bushy on statues, but thin on trumpets. The statues depict brutish monsters, but the trumpet faces belong to benevolent-looking men. No anatomical details beyond faces are given on trumpets, but the chlorite men possess massive bodies covered with scale-patterns which prompted Francfort to call them anthropomorphic dragons (1994, p. 409)[43]. Trumpet faces are decidedly human.

One striking detail on the chlorite faces is absent from the trumpet faces, but it suggests a curious connection between the two. The upper and lower lips of each chlorite face are pierced by wide holes. The holes are now empty, but something (a wire or thread) must originally have been

[41] For a 19th century illustration of the Caucasian bison, see Demidoff 1898, p. 77.

[42] Amiet, 1989, p. 174. Ghirshman, 1963 has five statuettes. For the sixth, see Sotheby, 1999, pp. 50-3, and anonymous loan in The Metropolitan Museum of Art, inv no. 1999.70. The corpus is also discussed in Parrot, 1963, Spycket, 1981, p. 213, Amiet, 1989, p. 176-177, and Francfort, 1994, figs. 3-5.

[43] Others interpret the pattern as body hair, Ghirshman, 1963, p. 159; also Amiet, 1989, p. 174 who sees influences from the Indus Valley. Nor is there agreement about the round object the men carry in the crook of the elbow. It has been called a container (Amiet, 1989, p. 174; Francfort, 1994, p. 410) and a drum (Seidl, 1966). Could it be an Oxus trumpet?

there — probably attaching an object to the lips. Commentators have not found a convincing explanation, but it is clear that among the possible objects we must now consider Oxus trumpets and other objects meant to modify the voice.

A more extensive source of contemporary faces is offered by clay statues of men and women at Shahdād (Hakemi, 1997, p. 79). Their faces look other-worldly, akin to death-masks. In fact, Hakemi proposed the figures were portraits of the deceased (1997, p. 64). All men seem to have beards but it is not clear[44] if they lack moustaches[45]. The meek countenance of the Shahdād statues and the fierce demeanor of the chlorite men represent extreme poles of facial expression. Trumpet faces occupy a middle ground.

Table 3. Location of faces on Oxus trumpets

Catalog designation	Material	Middle	Rear
F1	Silver	1 male human face	–
F2	Copper	2 male human faces	–
F3	Silver	1 male human face	–
F4	Copper	1 male human face	–
F5	Copper	3 male human faces	1 tuft of hair (?)
F6	Copper	–	3 female faces (?)
F7	Copper	3 human faces	–
F8	Gold & Copper	3 bison faces	–
F9	Silver	–	(1 male face)*

*) Possibly a modern addition, see section 2.2.4.

[44] Facial hair is marked by black paint (Hakemi, 1993, p. 218). A recently published large color photo has black paint on the upper lip (Pourjavadi, 2001, p.121), but it seems more like stubble or dark skin, since the surface is not raised to give the moustache thickness.

[45] Hakemi, 1997, p. 549; Amiet 1986, fig. 129, p. 165.

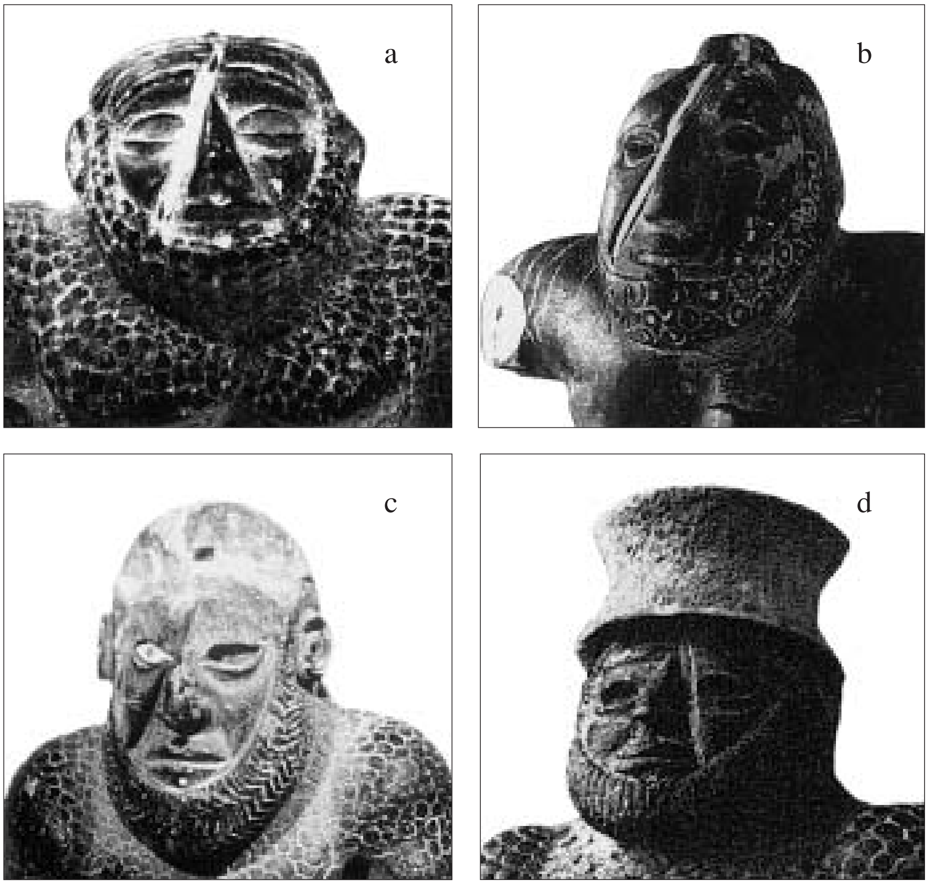

Figure 25. Chlorite men from Bactria/Margiana or northern Iran, 2300-1700 BCE.
a: The Metropolitan Museum of Art, Anonymous loan, L 1999.70.
b: Foroughi Collection, Ghirshman, 1963, fig. 9.
c: Musée du Louvre, AO 21104, Ligabue & Salvatori (1989, color fig. 106).
d: Foroughi Collection, Ghirshman, 1963, fig. 1.

7. METALS

7.1. Alloys and mixtures. To assess the metallic compositions of Oxus trumpets, some were analyzed using EDS[46]. In all cases the tests were done on the outside surface of the bell near the front. Since copper surfaces may have picked up impurities and silver may be

[46] Energy-Dispersive X-ray Fluorescence Spectroscopy.

tarnished, the analysis gives only an approximate idea about the original metal.

Gold trumpet F8 (fig. 15) contains about 70% gold, 28% silver, with traces of copper and zinc (<1% each). It is electrum (Moorey, 1994, p. 217), but I will continue calling the instrument a "gold trumpet." Silver trumpet B16 is nearly pure (99.8%) with minute traces of gold, lead, and copper.

PIXE analysis[47] on the plain silver trumpets in the Louvre reveals equally low levels of heavy elements: <0.2% Sr, <0.5% Pb, and <0.03% Au except for the pair C4 and C5 which, for that reason, may have been one object. On some Louvre trumpets the silver had converted to AgCl (ca. 25% for C7 & C8 and ca. 13% for C3 & C6); C6 had calcified and contained 44% Ca. The level of bromine was low (ca. 05. %) except in C7, C9 & C10 (3%). It was probably absorbed from organic matter in the soil (Hedges, 1976).

The thick copper trumpet B15 has >90% copper, <8% lead, a few percent arsenic, and an undetectable (< 1%) amount of tin[48]. It is virtually pure copper, hardly "copper alloy" or "copper-rich bronze," terms sometimes used to describe BMAC copper. The high purity of silver, the silver-rich gold, and the absence of bronze agree with measurements on unexcavated cups and a goblet claimed to come from the Bactria/Margiana region[49].

Beside gold, silver, and copper, lead-trumpets may also have been used. A lead "vessel" at Shahdād has the same shape as a bulb trumpet (Hakemi, 1997, pp. 371 & 635, part Gn. 1) and is, as required, open at both ends. It lacks a mouthpiece but, with a length of 8.0 cm, it could well be an incomplete trumpet or a trial piece cast in an easily worked metal.

7.2. Distribution of metals in the corpus: the untypical emphasis on silver and gold. The total corpus given here consists of 41 trumpets[50]. Most are made of metal: gold, silver, copper. One is made of stone, and another is probably lead. The percentages are put in the second column of table 4.

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[47] Performed at the Centre de Recherche et de Restauration des musées de France (C2RMF) and reported in Compte-Rendu d'etude C2RMF/R 2978 (Paris, October 30, 2001).

[48] The values are similar to those measured on an arrow head from Hissār III: 97.8% copper, 0.05% tin, 0.08% lead, 0.04% zinc & 1.06% arsenic (Muscarella, 1988, p. 109, no. 176).

[49] Meyers, 1996, pp. 173-175; cf. Moorey, 1994, p. 239 on Iranian material.

[50] I.e., 40 gold, silver, copper, or gypsum trumpets (see note 18) + 1 lead trumpet (see previous paragraph).

Table 4. Materials used for object belonging to the Oxus Civilization

Material	Trumpets*	General items on the Bactrian antiquities market (from Pottier 1984, pp. 91-100)
Gold	15%	1%
Silver	58%	7%
Copper	23%	85%
Lead	2%	7%
Gypsum	2%	0%

* Problematic pieces (section 2.2.4) are omitted.

To get a quantitative estimate of a representative "general" sample, I count the objects in Pottier's catalog (1984, pp. 91-100) which contains looted Bactrian objects found in the Kābul bazaar 1978-9. The percentages, given in column three of the table, show that copper is the most common metal by far. Gold is exceedingly rare (half of the 1% Kābul-entry consists of gold trumpet F8) and silver is only slightly less so. On the other hand, precious metals dominate in trumpet manufacture, and the contrast to the general corpus is dramatic. The difference between the two columns in table 4 is too large to be explained as a preference for gold by collectors and/or disinterest in copper trumpets by looters.

The prevalence of precious metals, the exquisite designs, and the technical virtuosity point toward an ancient élite audience. The preference for technical brilliance can be seen in the relative distribution of types:

Plain trumpets	32 %	(17 % conical, 15 % exponential)
Bulb trumpets	49 %	
Face trumpets	19 %	(17 % humans, 2 % animal)

It is harder to make a bulb or a face trumpet than a plain one. Yet, the former types dominate.

7.3. Silver and copper reinforcements inside gold trumpets. Six trumpets are made of gold. Two of those, the Hissār trumpet and the bison trumpet, are built on top of inner trumpets made of harder metals (silver or copper). The silver trumpet inside the gold trumpet from Hissār (B4) long escaped

notice, but deposits of silver chloride betray it (fig. 4). Inside the bison trumpet (F8) is a copper trumpet, still nearly intact. X-rays show it to have a contour similar to the exponential plain design, creating empty cavities between the two shapes (fig. 9f). Now the spaces contain rattling objects, probably loose pieces of bitumen which, initially, had acted as an adhesive between the two metals.

At first look the two double trumpets appear to differ from the norm since the other four gold instruments (table 5) lack inner trumpets. But there are indications that they, too, had been double. Unfortunately, the two Astrābād trumpets (B5 & B6) are lost and the 1844 report provides no clue. But the two remaining gold trumpets (B17 & B18) show signs of recent restorations that removed material from the inside surface of the bell. Modern tools have been used to cut the front edge of B18. It is sharp and show file marks with crisp grooves. Tiny hair-like strips of gold hang from the edge. On trumpet F8 the front-edge is folded around the copper of the inner trumpet, and this technique was probably also used on B17 and B18. To free the inner metal, the restorer cut the edge and removed the remains of the inner trumpet. Using EDS on the inside bell surface, small amounts of zinc were found, probably a residue from attempts to clean it electro-chemically[51]. Most likely, the two trumpets had (broken and unsightly?) layers of copper or tarnished silver inside the gold surface, and these were removed to enhance the market value.

Table 5. Weights and composition of gold trumpets

Catalog designation	Metals	Mass (grams)
F8	gold & copper	64.7
B4	gold & silver	10.9
B5	gold (only?)	170 (2 trumpets), see note 29
B6	gold (only?)	
B17	gold (&?)	25.7
B18	gold (&?)	17.7

[51] The trumpet would have been put in a bath of caustic soda surrounded by metallic zinc (Plenderleith, 1971, pp. 195-197). In the chemical reaction, bubbles of hydrogen rise from the surface and break deposits, but the process leaves traces of zinc.

8. Manufacture

I have personally inspected 20 trumpets (B4, B14, B16-B18, C3-7, C9-C10, C8-C10, E6, F3, F5, F7, F8) and found no visible solder joints. X-ray photos (fig. 9) confirm this. There are no dark patches indicating lumps of solder, and wall thicknesses vary smoothly from rear to front. Evidently, every trumpet was made in a single piece, either hammered or cast.

The ductility of metals varies from high (gold), via medium (silver) to low (copper). As a result, the first two metals can be hammered into complex shapes. Copper is much more difficult to hammer, making it nearly impossible to "raise" copper into protrusions, i.e. the noses seen on F4, F5 & F7. As a result, face trumpets were cast in copper and hammered in gold and silver.

8.1. Hammered silver and gold. The difficulties were formidable and made worse by the small size of the object. The smith began with a single lump of gold or silver and formed it into a doughnut shape (Moorey, 1994, p. 28; 1994, p. 216). Anvils and stakes were forced into the hole to act as supports against the hammer blows. The metal gradually thinned and expanded into the desired shape. In 1950 similar tools were still used by Iranian smiths (Wulff, 1966, pp. 20-37) who stretched metal bowls by beating them with pointed iron hammers against iron stakes trust into the ground (Wulff, 1966, fig. 19). The anvils (flat, round, curved, and beaked) were just as important as the hammers (Wulff, 1966, pp. 25 & 34), but the most useful implement was the snarling iron. It is a long slim platform with a curved iron prong at the front. In repoussé (embossing) work the smith employed a large variety of chisel shapes (Wulff, 1966, fig. 43). Similar tools were probably used by trumpet makers 4,000 years ago[52].

In 1998 an expert craftsman[53] replicated the bulb trumpet in fig. 1B. Using modern tools, he set out to make the entire instrument from a single lump of silver, but the effort came to naught. Instead, it had to be made in two parts with the mouthpiece soldered to the main body. The

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[52] Some ancient bronze anvils and hammers shown by Deshayes (1960, Pl. XXXVI, 1-3, no. 19; Pl. XL, nos. 1-6; Pl. LXIII, nos. 1-4; lx, nos. 9-12) seem suitable, but all have later dates (second millennium BCE) and none was adequate for all phases of the work. But as Deshayes pointed out, smiths may have used tools of other materials than bronze.

[53] Trained as a silversmith in Copenhagen.

joint was invisible on the outside but easily seen on the inside. The smith, accustomed to making dinner ware and decorative objects, found the trumpet his most difficult assignment.

8.2. Cast copper. Although most copper trumpets probably were cast, few show the characteristic signs of such a process. Most surfaces have been thoroughly cleaned and lost their original structure, but trumpet B15 is an exception. Its exterior has large patches which emit colors characteristic of copper compounds. Green layers of malachite mingle with blue spots of azurite on top of purplish-red copper oxide (cuprite), and display dendritic patterns in which long lines are crossed by many short lines. Such patterns reveal the crystalline structure acquired by the metal when heated to the melting point, i.e., the piece was cast[54]. If hammered, the pattern would have been a random collection of lines inflicted by hammers at temperatures well below melting.

9. Are they trumpets?

In 1920 the only evidence for trumpets were sketchy drawings of two Astrābād trumpets, and Rostovtzeff questioned their identity. Seventeen years later Schmidt called his Hissār objects "problematic devices." Another 40 years had passed when Hakemi concluded his trumpet (F2) was not self-sufficient but "part of a musical instrument (trumpet) made of wood and metal. The wooden part has decayed and disappeared." He thought it necessary to lengthen the instrument with a hollow wooden tube to which the surviving metal part was attached. The short length has troubled other scholars too. Amiet proposed they were non-functional miniature versions of large trumpets[55]. As precedent he pointed to small non-functional terracotta axes (ca. 2200 – 1800 BCE), presumably votive offerings (Amiet, 1986, fig. 81; also Woolley, 1956, Pl. 16, U. 16.221 and Speiser, 1935, Pl. LXXX, nos. 6 & 7). But this cannot be the case here, for no large version of the trumpets has been found, and the small ones function well as sound-producers.

[54] Freshly cast metal would have had a similar, but invisible, crystalline structure. Visible lines form over a long time when the borders between crystal sections slowly oxidize and acquire distinct colors.

[55] Private communication, July 1997.

Circumstantial evidence points to them being trumpets. The clinching argument would be a picture of a person holding a trumpet in front of his mouth playing it. Such a scene is nearly present on a silver vessel: a man is shown putting a bulbous object to his mouth (fig. 26)[56]. It looks like a trumpet but, alas, it is merely a drinking vessel appropriate for a banquet scene. Such vessels have been excavated (Hiebert, 1994, fig. 9.26 no. 19 & Sarianidi, 1998, figs. 69, 72). The trumpet and the vessel shapes are very similar; perhaps one inspired the other[57].

Yes, the objects are trumpets. The assertion has three underpinnings: (1) the consistency of the trumpet corpus, (2) the design which favors sound production, (3) the similarity of the sounds to animals calls, and (4) references in ancient Zoroastrian texts to trumpets that interact with animals and humans.

9.1. Corpus consistency. To be a trumpet, a pipe must have (1) an unblocked passage through which the air can flow, (2) a shape expanding toward the front, and (3) a comfortable mouthpiece at the rear. All three criteria are met by every member of the corpus. Not a single intact trumpet has a blocked pipe, contracting shape, or impractical mouthpiece. For a corpus of this size (figs. 3, 6-8), such consistency can hardly be coincidental.

9.2. Acoustic match between pipe and mouthpiece. Two unique features cooperate to make it a successful trumpet[58]. Its short length results in a high pitch, and the mouthpiece is designed to help the lips vibrate at that pitch. With a pipe of 8 cm length, we expect[59] a fundamental resonance frequency near 1000 Hz, and that is what we get when the instrument is blown. It is the frequency of a tone pitched near c''' (two octaves above middle-C).

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[56] Amiet's rendition of the scene (1989, fig. 9) shows more beard than Sarianidi's (1986, pp. 168-9), but the clearest illustration is in Arnold (1996, pp. 14-17).

[57] Unlike trumpets, vessels have closed bottoms.

[58] Details are examined in an accompanying paper (Lawergren, 2003), but an outline is given here.

[59] Using the formula $f = c / (4 \cdot L)$, where f, c, and L are frequency, speed of sound in air (ca. 340 m/s at room temperature), and pipe length. The formula applies to a tube open at one end and closed at the other. This condition pertains to trumpets because the lips nearly close the rear end.

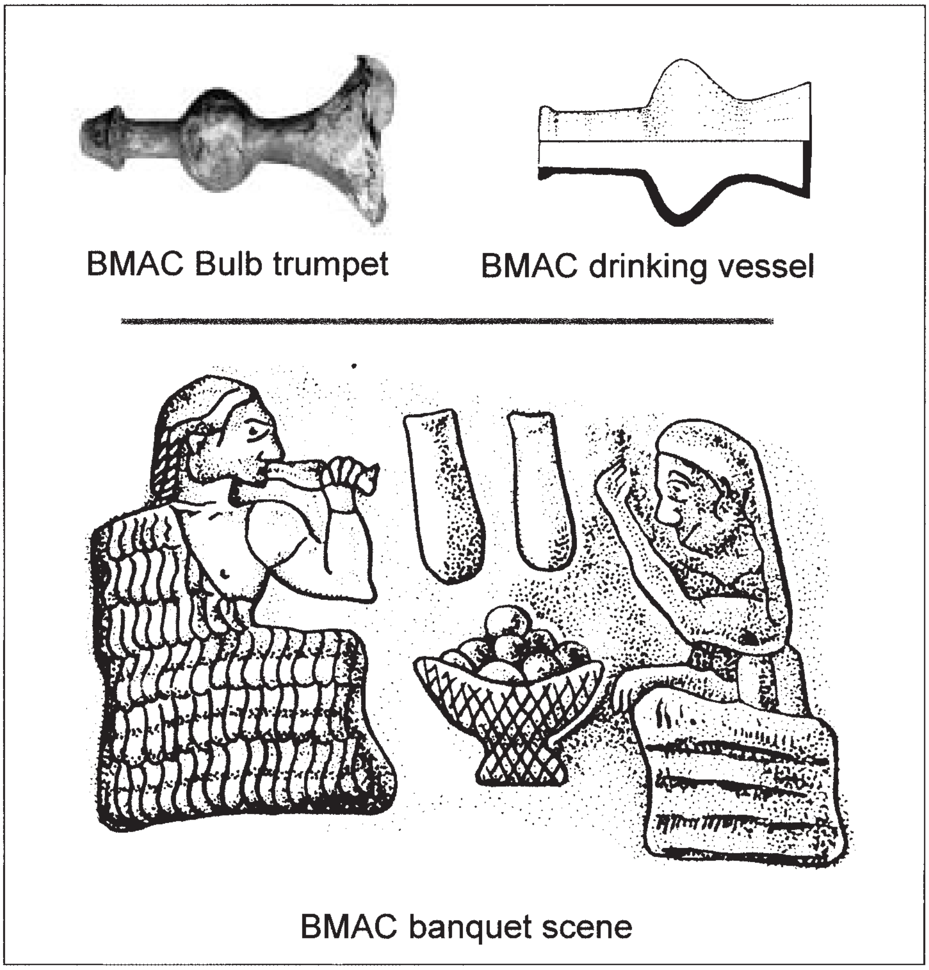

Figure 26. Bottom: Drinking scene from an Oxus gold vessel (Sarianidi 1986, p.168; Arnold 1996, pp. 14-17). Top: Comparison with bulb trumpet B14 (8.0 cm long) and a metal drinking vessel from Margiana (7.6 cm long, Hiebert, 1994b, fig. 9.26.19).

The pitch is high, but similar ones can be coaxed from regular (long) trumpets in overblown modes. A modern orchestra trumpet in C (116 cm long) would have to be overblown to the eighth harmonic[60]. Valveless trumpets at the time of J.S. Bach (early 18th century CE) were even longer

[60] For tables of trumpet harmonics and lengths, see Baines (1978, pp. 26-29) or Tarr (1988, pp. 7-18).

(ca. 240 cm), and the same pitch would occur at the 16th harmonic[61]. For a single pitch there is little difference between an 8-cm Oxus trumpets and a long modern one. The difference arises when we want to play stepwise diatonic or chromatic scales up and down from this pitch. Long trumpets can do so because their overtones lie closely together in this high range, but short ones are limited to the single pitch of their fundamental[62].

On the other hand, the pitch of short trumpets is not locked firmly to the resonance, but can slide up and down. This is due to the relatively small air mass in the pipe. It, and the lip tension, control the lip frequency. Here the lips are more important, but on long trumpets the air mass dominates. On short trumpets the lips can force the pitch to slide (as in a *glissando*).

Although cavities of Oxus trumpets are designed to resonate at approximately 1 kHz, it is quite a different task to make the lips vibrate at that high rate. Players of modern instruments need much practice to do so, and achieve it by exerting very high lip tensions. Here the second unique acoustical concept of Oxus trumpets comes into play: they are designed to require modest lip tension at this high frequency. This is brought about by the mouthpiece, which is designed to restrict the vibrating mass to a small sliver of flesh at the back of the lip (fig. 27b). A small mass can vibrate at high frequencies even when the lip tension is low. It becomes relatively easy to reach the high c''' on Oxus trumpets. The author, an untrained trumpeter, has little difficulty producing this pitch. Accomplished players get the pitch with less extraneous wind noise[63].

The action of the mouthpiece is illustrated in fig. 27. The modern trumpet has a large mouthpiece covered by the lips which vibrate with their full thickness (fig. 27c). But Oxus trumpets use truncated cones that intrude between the lips and leave a tiny fraction of the lips free to vibrate (figs. 27a & 27b). It is only a few millimeters thick whereas the full lip is

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[61] One work (Brandenburg Concerto No. 2) is a trumpeter's nightmare. Bach included many virtuoso passages at even higher harmonics. Modern trumpeters — used to instruments with mechanical valves and tubes of half the length — have only recently learnt to play it on the long valveless trumpets that would have been familiar to the composer.

[62] In principle, they can also produce overtones, c'''' (an octave above at 2 kHz) being the first, but lips resist such fast oscillations.

[63] On the other hand, highly trained players of modern trumpets have difficulties. Their embouchures are precisely adjusted to the requirements of modern instruments and cannot easily readjust to the radically different conditions of Oxus mouthpieces.

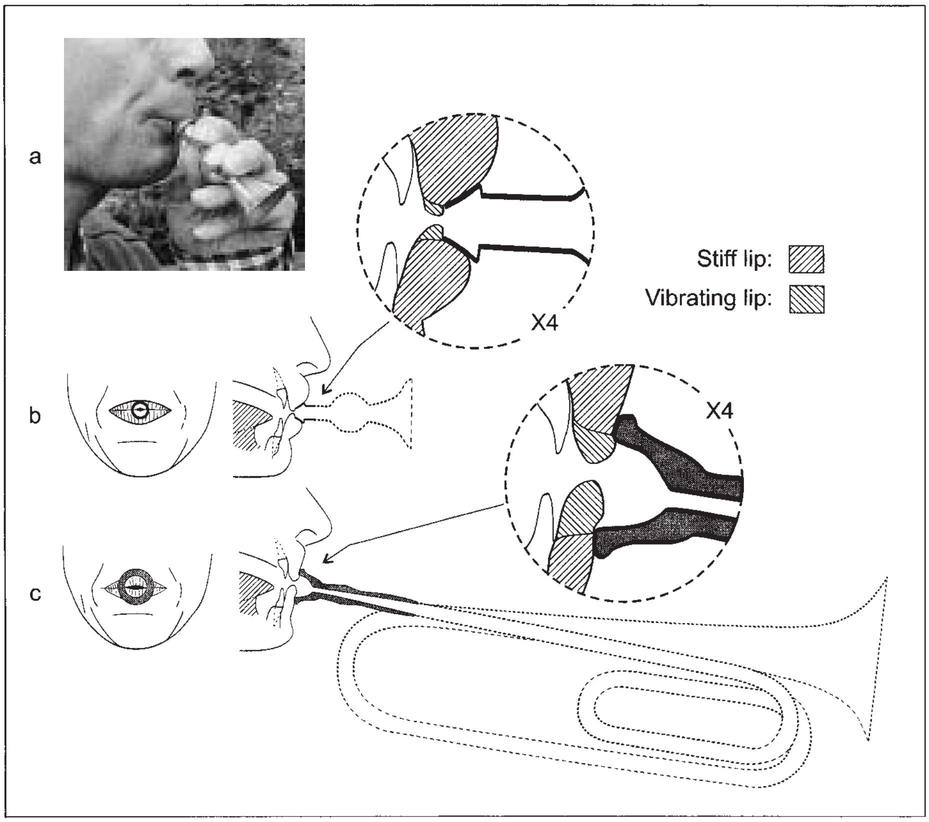

Figure 27. Comparing Oxus mouthpieces to a modern one. All are drawn to the same scale, except the encircled areas which are expanded four times.
a & b. The Oxus trumpet.
c. A modern bugle.

approximately 6 mm thick. It is difficult to measure the effective mass of the vibrating lip[64], but a rough estimate indicates that the lip tension on an Oxus trumpet playing a pitch of c''' should be similar to that used on a modern trumpet playing two octaves lower. However, the narrow lip passage allows relatively little air into Oxus trumpets, and the sound volume is low. Compared to long trumpets, their sound is high-pitched, soft, and easily able to slide within a small range.

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[64] Elliott & Bowsher (1982) obtained the effective lip-mass on modern instruments by measuring air flow and vibration frequencies.

The match between the short length and the shape of the mouthpiece appears too uncanny to be coincidental and could hardly have arisen without the trumpet being played. Although the Oxus objects are trumpets as defined by the rules of acoustics and organology[65], they may not necessarily be musical instruments. With a range more or less restricted to one pitch, they cannot produce music (as we know it), and with small loudness they are ineffective as signal instruments. On the other hand, the soft and sliding sounds with frequencies near 1 kHz are reminiscent of animal calls.

The narration could stop at this point, having dealt with the trumpets and their sounds. Were it not for an ancient Zoroastrian text, apparently referring to these trumpets, little more could be said — apart from vain speculation about purpose and societal function. But the ancient text is accepted by Zoroastrian specialists, and it states that the trumpets were once used to lure animals peacefully. From there it is a short step to bypass the peaceful element, and view it as a hunting tool which lured quarry. Could its sound mimic the calls of hunted animals?

9.3. An example of animal sounds: deer calls. To evaluate the possibility we need the sounds of all animals hunted in the region of the BMAC, but there are good reasons to concentrate on deer. They are, and were, a desirable quarry in many parts of the world, and existed in the region. In England deer have long been considered the prime quarry, as demonstrated by the fact that the king claimed most of them. He owned large forests across the country (e.g., Sherwood forest, the forest of Dean). The 13th century Forest Law forbade anyone to hunt the "beasts of the forest" since they were the king's property (Turner, 1899, p. cxvii). The beasts, also known as "the king's venison", were defined as the red deer, the fallow deer, the roe, and the wild boar (the latter had become scarce already at that time, Turner, 1899, pp. xiii). But the exceptional value of deer was demonstrated earlier by William the Conqueror whose hunting laws singled out "deer, hart, and hind" for protection. Anyone (except the king) who killed such animals would be blinded, according to the Anglo-Saxon Chronicle (Savage, 1982, p. 220).

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[65] See note 1.

Deer calls are relatively easy to imitate[66]. At rutting time both the female roe deer (*Capreolus capreolus*) and the young female fallow deer (*Dama dama*)[67] emit sounds similar to those of the Oxus trumpet. The sounds resemble short moaning cries ("bleeping"). In sonograms they appear as short overtone-rich bursts of ca. 500 ms duration with the lowest frequency components near 1.0 kHz (for the fallow deer) and 1.5 kHz (roe deer)[68]. The initial part of each burst is loud but it quickly descends in pitch (some 30%) and loudness. Fallow deer usually put out a 5 s long sound cluster containing 5-6 bursts at seemingly random time. The loudness of the bursts increase progressively until the animal falls silent for approximately 10 s. The sequence is repeated with slight variations time and again. Young red deer have similar calls (Vaňková & Málek, 1997, fig. 2). But male deer usually emit bass sounds outside the range of Oxus trumpets[69]. On the other hand, animals not related to deer may also have sounds with fundamentals near 1 kHz (Fischer et al., 2001, fig. 1).

The accuracy of the imitation must be judged by the animals themselves, and they signal the verdict by their behavior. If a male deer finds the sound similar to a female deer, he will be curious and approach the source of the sound, especially in the rutting season. The response is, of course, also influenced by other factors, such as the degree of sexual excitement, the presence of a "natural habitat," and the absence of distracting noise. To my ears, though, the sounds of Oxus trumpets seem close to deer calls. Further research could settle the issue[70].

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[66] The most complete collection of animal sounds seems to be in the Wildlife Section of the British Library National Sound Archive (Internet address: http://www.bl.uk/index.html), but there are wide lacunae. There are also many types of call pipes available in hunting stores.

[67] Cassette tape supplied by British Library of Wildlife Sounds (September 22, 1980).

[68] As one would expect, young animals give higher pitch than adults since they are smaller. There may, indeed, be size-effects in sound production, just as there is in reception (Heffner & Heffner, 1990, fig. 4).

[69] Male roe deer and fallow deer tend to grunt with fundamental frequencies several octaves below those of female calls. Adult female red deer can also produce sounds of fundamental frequencies near 110 Hz (Vaňková & Málek, 1997, p. 285).

[70] There seem to be no scholarly studies of an animal's response to an artificially produced call. The widest published survey of emitted animal sounds is Tembrock's, but his results (1963, table 65), are incomplete and unreliable (due to inadequate instrumentation in the 1950s?). Recently, the proliferation of microcomputers has put sophisticated sound analysis within easy reach (Owren & Linker, 1995). Academic research has intensified but concentrates on the information carried by calls (Marler, 1977, pp. 24-29), mostly on birds and primates (e.g. Fischer, et al., 2001).

9.4. Zoroastrian texts about trumpets that control animals. According to Zoroastrian mythology, the first two rulers of mankind were Yima[71] and Żaḫḫāk (Arabic: al-Ḑaḫḫāk). The former was as benevolent as the latter was evil, but both used trumpets to call humans and animals.

Yima's story, told in the Avestan language, appeared in *Vendīdād*. Early in his reign Ahura Mazdā gave him two tools[72], "a golden trumpet and a gold-adorned whip." Many pleasant years passed during which Yima extended his earthly dominion, and creatures multiplied. Yima used his tools[73] to "drive [the inhabitants of] this earth on with the golden trumpet and strike [them] with his whip." But Ahura Mazdā announced that many cold and wet years would follow and ordered Yima to make a large underground shelter in which to gather humans and animals. "Go over the shelter with the golden trumpet." Apparently, Yima used the trumpet and the whip to control[74] the beings living in his clime.

Vendīdād was committed to writing during the Parthian period (ca. 200 BCE – 200 CE). It has pre-Zoroastrian elements (earlier than 1200 – 1000 BCE)[75], and some are woven into Yima's story. Conspicuous details may well have survived in folk memory during the time between the demise of Oxus trumpets and the rise of Zoroastrianism (i.e., 1800 – 1200 BCE), although the recollection might be vague and padded with

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[71] Aspects of Yima are extensively discussed by Zaehner (1961, pp. 126-7, 131-41), and Boyce (1975, pp. 92-7).

[72] The Avestan terms for the two gadgets are *suβrā-* and *aštrā-*. These have long been translated "goad and whip," but in 1980 Duchesne-Guillemin showed that the correct translation is "trumpet and whip." Żaḫḫāk's golden trumpet was known as a *sūrākōmand* (in Pahlavi) and *minfakha* or *mashāra* (Arabic). The translation is now generally accepted by Iranologists, e.g. Kellens, 1984. — In writing *suβrā-* the first part forms the stem and the hyphen stands for a suffix determined by the rules of Avestan grammar. The *β* is pronounced as a bilabial voiced fricative approximately like "v" in "verb." The letter is sometimes written "*w*," especially in German literature, i.e. *suwrā-*.

[73] Boyce, 1984, pp. 94-96, with "trumpet" substituted for "goad."

[74] The *Vendīdād* text does not explicitly state that Yima's trumpet attracted, lured, or controlled animals and humans into the shelter. But "attract" is used in the supporting texts Duchesne-Guillemin introduced to ascertain the meaning of *suβrā*, e.g, in the passage cited below (n. 80): "Et que, chaque fois que dans un climat il trouvait une belle femme ou une bête élégante, il soufflait dans cette [trompette] et, par la magie, les attirait à lui."

[75] Boyce, 1984, p. 94; Gnoli, 1980, p. 151; Skjærvø, 1995, p. 165. Traditionally, scholars had put Zoroaster much later (ca. 600 BCE, Mallory & Mair, 2000, p. 105), but arguments now favor the second millennium date.

elements of myth[76]. Memories may have been strengthened by the fact that Zoroaster is thought to have lived not far from Margiana and Bactria[77]. Three elements stand out in the story: (1) the trumpet occurred at the beginning of time, (2) it was associated with the highest stratum of society, and (3) it could lure animals and humans. These details fit the circumstances of Oxus trumpets. Although the trumpets became the subject of Zoroastrian legend, they had no other influence on Zoroastrianism. Specifically, they played no role in its ritual practice[78].

Żaḫḫāk's story echoes Yima's tale. His trumpet had the same ability to lure humans and animals, but he used it with wicked intent. As an early Pahlavi text[79] put it: "When he learns that someone has a good woman, he attracts her with his trumpet (Pahlavi: *sūrākōmand*) of gold and makes her his slave." According to a tenth century Arabic text[80], "whenever he wishes to exercise his magic, he blows this trumpet (Arabic: *minfakha* and *mashāra*) and spreads death, sickness, or famine in a clime. Every time he finds a beautiful woman or an elegant animal in a clime he blows his trumpet and, like magic, she/it is attracted to him." Slightly later an Arabic writer describes Żaḫḫāk as "the first who sang and [the first] to whom [musicians] sang… when he wished to attract something he owned or liked, such as a woman or a servant or an animal for riding, he used to blow into a golden trumpet (Arabic: *qasaba*), that he owned, and everyone he wanted [to attract] would obey

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[76] The longevity of ancient oral traditions is hard to quantify, but some insight was given by Staal's examination of memorization techniques of the Nambudiri Brahmans of Kerala, India. Pairs of Brahmans recite hymns in complex patterns of repetitions, and inverted repetitions, of words and syllables. When this takes place at temple feasts, diners finish courses at certain points in the recitation and the last mouthful is taken simultaneously with the last strain (Staal, 1961, pp. 45-47). Since memories of two reciters are matched, and the performance is both playful, precise, and integrated into the rules of society, retention is cultivated. Moreover, the Sanskrit grammatical rules given by Pāṇini (second century BCE) still apply, a documented retention for more than two millennia, much of it as oral tradition.

[77] References in note 75.

[78] According to its sacred texts (West, 1965; Darmesteter & Mills, 1965; Winternitz, 1965a), Zoroastrian rituals were devoid of music.

[79] *Dēnkart* (IX, 21, 13), a Pahlavi commentary on the Avesta collected in the ninth and tenth centuries CE, but "very ancient in substance" (Boyce, 1984, p. 4). Translation taken from Duchesne-Guillemin, 1980, p. 541.

[80] al-Maqdisī (d. 966 CE), *Kitāb al-bad' wa al-tārīx*. French translation in Duchesne-Guillemin, 1980, pp. 541-2.

whenever he blew that [instrument]… that is why the Jews blow the trumpet."[81]

Quite likely, Yima's story was the result of a long backward glance at Oxus trumpets. The glance pierced through six centuries' mist-of-time, and the nebulous image was passed on to Zoroastrian priests who transmitted it orally into the first millennium CE. There can never be absolute proof that the Oxus trumpet was remembered as the *sußrā*, but several aspects are persuasive, such as the highly specific meaning of the term (it did not designate wind instruments in general), the rise of the story in a region where the unique instrument once had flourished, the assertion that the trumpet was made of gold, and the ability of trumpets to communicate with animals.

10. Societal role: hunting implement

10.1. Previous idea: trumpets commanding horses. Twenty-six years ago Ghirshman searched for a device that could command chariot horses. "The excavated sites have produced that object, but it has remained misunderstood and has not aroused any interest. They were bugles, five in all: three in gold and silver unearthed at Tepe Hissār and two of gold, part of the Astrābād Treasure. Asia did not have to wait for Greece to introduce the sound of bugles to the cavalry. In fact, the trumpets one sees in the hands of Amazons, Phrygians, and Persians were inherited from the Orient. The sound of trumpets is also indispensable when training horses, let alone pulling chariots or employing them in battle. The drum is bulky and its sound is too dull to overcome the noise of rolling chariots. On the other hand, the sound of trumpets carries far. The precious metals which were used in the manufacture of the excavated bugles and their number would indicate that they were reserved for those on the highest ranks in society, for princes or high dignitaries who commanded the army from chariots" (1977, pp. 16-18). Ghirshman was thinking of the well-established function of trumpets stated in the first paragraph of the current paper[82], but it does not work here. The sound of Oxus trumpets is far too weak to control horses and would drown in the noise of drums.

[81] Hebrew *shōfār*, see Zotenberg, 1900, pp. 22 & 24. Presumably, the writer adopted earlier Zoroastrian sources for the first part of the quote. The fanciful comment on the Jewish *shōfār* might be his own 10th-century spin.
[82] Ghirshman's statement has become an oft-repeated orthodoxy, e.g., Parpola, 1995, p. 361.

On the other hand, Ghirshman's linkage of precious metals and high societal rank seems reasonable. Had he known the extraordinary workmanship invested in the trumpets, he would, no doubt, have found it just as significant. For him the élite was the leaders of the army, but for Tosi, Shahmirzadi, and Joyenda (1992, pp. 221-2) it was the priesthood or the civic leaders.

10.2. Present surmise: trumpets for hunting. Having introduced the idea that Oxus trumpets can mimic animals calls, I proceed to evaluate their role in hunting and determine who hunted. Most likely, the élite did, and their predilections would explain the use of precious metals.

10.2.1. Animal calls used in hunting. Today some hunters use sound imitations to lure animals into close range. The outcome may not be entirely predictable, but under favorable circumstances the method is efficient[83]. Various strategies are available. Not only can hunters lure bucks with the sound of roes at the time of rut, they can also alert the female roe by imitating the sounds of her new-born offspring (Grzimek, 1990, p. 206). A buck may be challenged by noises mimicking an infringing buck and may approach for combat. Feeding instincts can arouse a fox when he hears the squeaks of a mouse. Some of these sounds can be imitated by Oxus trumpets and, in the case of the buck, the prize would be a large animal with impressive antlers. Indeed, an esteemed quarry.

Stalk hunting (*Pirsch* or *Pürsch*) with sound imitation (*Lockruf*) is well attested in present-day Germany. It proceeds at a slow pace with the hunter cautiously sneaking up on the animal, all the while softly emitting mimicking sounds. The method has gained a following in Britain (Whitehead, 1986, pp. 95-98). Berger observed many devices to help hunters produce animal sounds in Hungary (1928, p. 204) and found a German hunter who produced convincing results by manipulating only his voice, hands, and nasal passage. Commercial devices made in Germany (Whitehead, 1993, p. 333) produce a variety of animal sounds[84]. In

[83] Today, with dogs and guns, it is difficult to appreciate the challenges of ancient hunting methods, but a Corsican proverb is corrective: "The hair that a hunter lost is heard by the deer, smelled by the boar, and seen by the mouflon ram" (Grzimek, 1990, p. 545).

[84] In 1986 I met a woodsman with an extensive repertoire of animal sounds. He lived in a small cottage deep in a deep forest some 200 km north of Stockholm. His imitations

America[85] and Scandinavia (Sundh, 1989, pp. 62-67) hunters use small birch trumpets, about 30 cm long, to imitate elk and moose. The Ainu of northern Japan mimic deer sounds with a complex contraption of wood, fish skin and fish gut (Coon, 1971, p. 87). Whitehead shows an Iranian man blowing a curved animal horn to call a maral (a kind of deer)[86]. One can easily imagine the vital role of *Pirsch* and *Lockruf* when specialized hunting dogs were uncommon and long-range weapons few.

10.2.2. Hunting calls in Margiana. From excavated bones, we know that onagers, hares and birds were hunted in Margiana ca. 2000 BCE[87]. Still wider fauna appears on local art from that time, e.g., tigers and mouflons. At present deer live on the banks of the river Murgab which runs into Margiana (fig. 2), and they populate the region along the Oxus (Tshlenova, 1963, p. 58). In fact, they are widely distributed in Eurasia (Grzimek, 1990, p. 204). With deer abundant in Bactria and Margiana, and highly esteemed as a quarry in many societies, it is hard to imagine they were not hunted in the Oxus region. Since deer are easily lured by sound imitation, and appropriate sounds can be made on Oxus trumpets, one sees a role for Oxus trumpets in Oxus hunt. Iran, too, has abundant deer (red deer, roe deer, fallow deer), as well as wild goats, onagers, and mouflons (Misonne, 1968, p. 295). Oxus trumpets could have found similar use at Hissār, Shahdād, and Astrābād.

Pirsch with sound imitation was not the only hunting method at this time and place. A vivid scene (fig. 28) on a silver vessel shows a noisy ibex hunt with hounds, whips, and archers (German *Hetzjagd*). Drawing on current hunting practice, we interpret the large person on the right as the Master-of-Hounds who controls his pack with the crack of a whip. The whip has a rigid handle and a flexible string below. Fringes tied to the

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of local animals (many types of birds, deer, elk, bear, fox, etc.) sounded convincing and looked simple to produce. He used only his voice, cupping his hands in front of the mouth.

[85] The Penobscot Indians of Maine imitate the amorous calls of the cow moose through a cone of birchbark (Coon, 1971, p. 86).

[86] Nature provides many objects that aid sound production, e.g., leaves can be put between one's lips and blown to make loud bleating tones; hands can be cupped and blown to make soft owl-like sounds. Some are age-old children's toys (Lund, 1985) and may not necessarily be effective in hunt.

[87] Hiebert, 1994, pp. 133-4. Ligabue & Salvatori (1989) have color photos of several wild mammals now living in the region: cheetah (pl. 9), saiga (pl. 11), onager (pl. 12), and wild goat (pl. 13).

string make a lashing noise when the whip is cracked. It does not hit the hounds but the sound sends a signal to them. The hounds chase a flock of ibex, three adults and one fawn. The flock is in full flight, but one ibex has been stopped by a bite around the nose. Nearby, another hound has stopped to bare his teeth and bark. Archers, crouching in the front, kneel ready to shoot the approaching animals. The *Hetzjagd* and *Pirsch* represents two opposite poles in the hunter's soundscape.

Oxus trumpets could direct the quarry in *Pirsch* hunt, and this circumstance may have given rise to the notion that Yima used them to affect animals. Ahura Mazda's other gift, a whip like that in fig. 28, would have communicated to animals in a different mode.

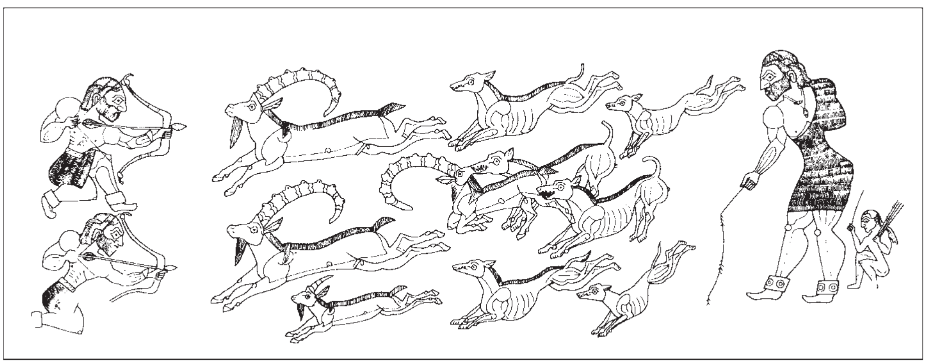

Figure 28. The hunt of four ibex animals shown on a silver cup from highland Iran or northern Afghanistan, first half of the second millennium BCE. Bothmer, 1990, p. 44. Drawing: Elizabeth Simpson. Private collection.

10.2.3. Hunting and the élite. The societal rules of hunting are not known in the Oxus civilization, but in many ancient societies large animals were reserved for the élite who controlled the grounds. Big-game hunting was considered a royal prerogative in the ancient Near East and Egypt. Neo-Assyrian wall reliefs show the royal hunt of lions[88], gazelles[89], stags[90], and onagers[91] in royal parks. Texts also mention elephants, wild bulls, and

[88] Barnett, 1976, pls. X, XI, XII & XIII.
[89] Barnett, 1976, pls. XLVI & XLIX.
[90] Barnett, 1976, pl. XLIV.
[91] Barnett, 1976, pl. XLVIII.

ostriches (Oppenheimer, 1964, p. 46). At the end of the hunt ritual libations were poured over dead animals in the presence of the king and to the sound of doubled harps standing side by side[92]. On the other hand, small animals like hares and birds were hunted and transported by low-ranking foot soldiers (Albenda, 1986, pls. 85-87). On Egyptian illustrations of the Old Kingdom only rulers hunt (Altenmüller, 1975, p. 222).

The élite status of the Master-of-Hounds is expressed in the hunting scene of fig. 28. He has two pendants hanging from chains around his neck and carries another one in his hair. This contrasts with the archers who lack expensive adornments. Their lower-class affiliation is probably also signified by less elaborate dress. The double circles on the master's ankle cuffs may represent expensive adornments. The archers lack circles. The Master/hunter has a helper who sits submissively and supplies spare parts for the whip. The acquisition of hounds required wealth and their training demanded specialized knowledge. This puts the hunter among the élite.

As mentioned in section 9.3, the hereditary élite of medieval Europe regarded deer as their property, but the custom was only the tail-end of a long tradition. If such privileges were upheld in Bactria/Margiana, one would expect Oxus trumpets to be used by the élite in deer hunt. To mark their status, they probably acquired gold and silver trumpets. Lower-ranking hunters would have put up with plainer models.

At some stage the hunt may have begun to incorporate ritual aspects, just as it did in Assyria. If confined to ritual use, elegant trumpets would have avoided exposure to the bustle of the field hunt and become a tool of the priesthood.

10.2.4. Tentative links between trumpets and hunting in archaeological records. At Hissār the trumpets had been placed near luxury representations of the mouflon. Most items were crowded together in Hoard I, but the trumpets lay in a separate cluster apart from the rest. Schmidt's map of the treasure shows them in two spots, ca. 50 cm from the nearest item (fig. 29). They shared the secluded spots with five decorative mouflon faces cut from flat sheet gold, about 13 cm wide and 0.2 mm thick. According to Schmidt the faces had "seven pairs of perforations [that] pierce the long coiled horns and the beard of the animal," and they possessed "elliptically

[92] Reade, 1983, p. 57. A millennium later, a royal boar hunt is still shown accompanied by harps at Ţāq-e Bustān (Heimpel, 1970).

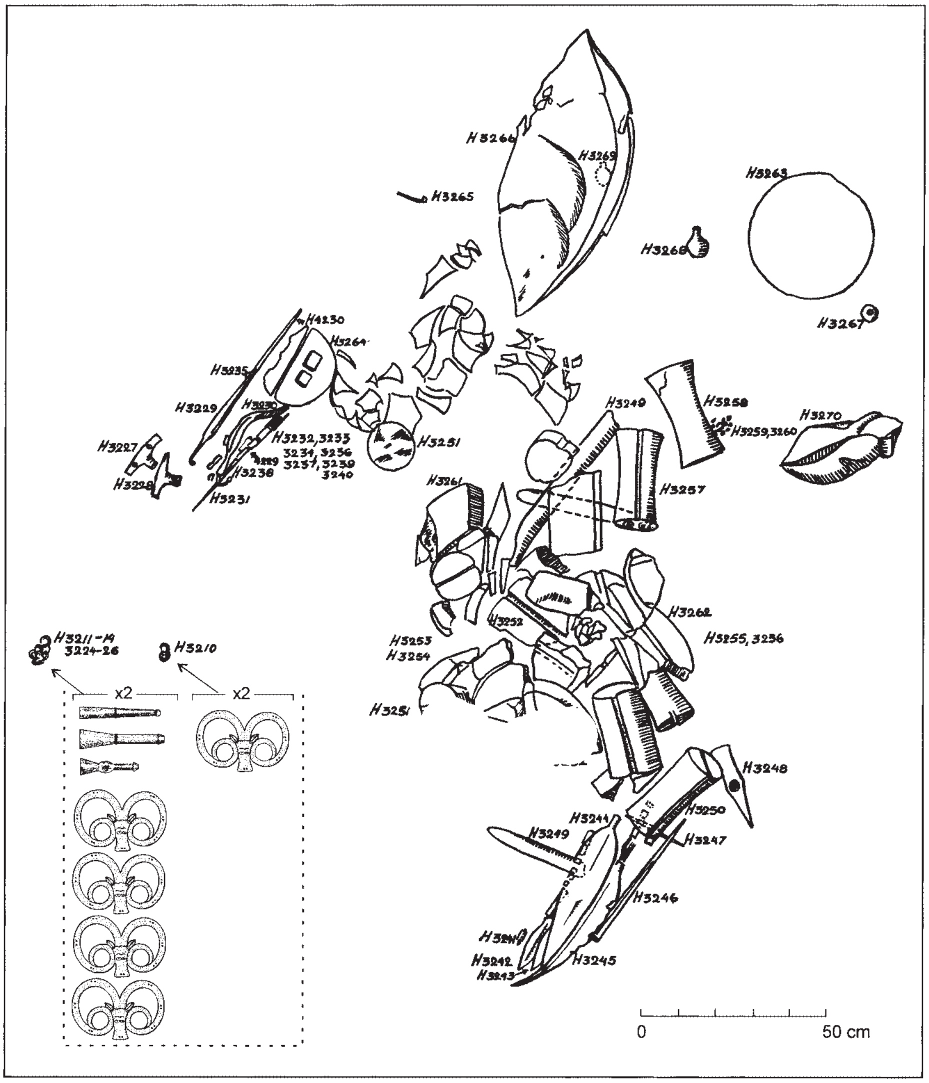

Figure 29. Plan of Hoard I on Treasure Hill at Tepe Hissār (Schmidt, 1937, fig. 97). Two isolated spots contain trumpets and mouflon faces (Schmidt, 1982, figs. 15 and 19), objects that are displayed at double size inside the dashed rectangle.

shaped eyes, well-defined eyebrows and raised ears" (1937, p. 189). He concluded that the mouflon heads had been sewed to cloth or leather. Because of the isolated position and the proximity of the trumpets and the heads, the spatial association seems intentional.

The mouflon, a wild sheep, was an elusive and desirable quarry: they "stay on the highest mountain tops where they are best protected from other animals, humans included… they are exceedingly shy… unfortunately, they have been extensively hunted, not only because of their impressive horns, but also for their meat which is excellent; even the guts are delicious" (Lieberkind, 1937, pp. 240-1). Judging by the many gold images on the garment, mouflons were greatly esteemed at Hissār, perhaps on par with trumpets. The proximity in the Hoard may indicate that trumpets and (mouflon) animals were associated, possibly through their role in hunting.

The burial of trumpet E6 may provide another indication that trumpets and hunt were affiliated. It is said to have been found with an arrow head[93], but the information and the interpretation are tenuous.

11. Indo-Iranian roots: Yima and Yama, legendary first musician-kings

The Avestan text about king Yima has a parallel in a Sanskrit text[94], and the correspondence opens a window into the mythological past of Indo-Iranian music. Just as king Yima was the first mortal in Iran, so king Yama was the first mortal in India, and both were musically inclined. While Yima sounded the trumpet, the praiseworthy Yama played the pipe:

> "this is the seat of Yama, called the god's (or gods') place. His pipe (*nāḻī*) is played here, he is praised by praise-poems" (O'Flaherty, 1981, p. 55, from *Ṛgveda*, 10.135.7).

It is not clear if Yama's instrument was a reed/bamboo pipe[95], or if the reed was cut and shaped to form a short vibrating membrane at the mouth-end of the pipe. In the former case it would have acted like a flute, in the latter like an oboe or a clarinet. But certainly, Yama and Yima both played wind instruments. The main difference was the material of manufacture:

[93] See note 33.

[94] Dated ca. 1500 BCE (Witzel, 1995, p. 97).

[95] The Ṛgvedic expression translated "musical pipe" is *nāḻī* which is derived from *naḍa* "reed," thus "reed pipe." Duchesne-Guillemin (1980, p. 543) cites the standard Sanskrit form *nāḍya*.

metal in Bactria/Margiana/Iran and bamboo or reed in India. Perhaps the choice reflects a difference in indigenous material: reeds were probably abundant near the Indus but less so in desert oases, although not absent (cf. the proposed reconstruction of the oasis environment in Bronze Age Margiana, Hiebert, 1994, p. 136).

These were the first documented instruments of people from whom Indo-Europeans descended[96]. Because of their early prominence, one might expect wind instruments to occupy an exalted place in later Indo-European imagination, but that is not the case. That position is instead held by string instruments, at least in the Classical world. In ancient Greece Apollo's kithara and Hermes' lyra triumphed over Marsya's pipes[97]. Even before the arrival of the Indo-Iranians, the image of a three-stringed arched harp was used as a writing sign of the Indus script[98]. After the arrival, the harp *(vīṇā)* frequently occured in Sanskrit texts[99] although not to the exclusion of wind instruments[100]. Likewise, Sumerians had large numbers of lyres and harps but few winds (for strings, see Lawergren & Gurney, 1987; for winds, Lawergren, 2000). In modern times this imbalance remains: guitars, pianos, and members of the violin family are ubiquitous[101].

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[96] For Indo-European language relations, see Mallory, 1989, pp. 22-23.

[97] It has long been accepted that string instrument held the loftiest position during the first millennium BCE in the eastern Mediterranean. Classical Greek literature and the Bible bear ample witness and, adding some guesswork, Frazer (1935, pp. 54-55) thought Cyprus displayed the same preference. Egyptian text hardly rank instruments, but tomb illustrations show large and prominent harps already during the Old Kingdom. Subsequently, harper's songs became a prominent literary genre.

[98] See note 16.

[99] The *Ṛgveda* (1500 – 1000 BCE) mentions the *gargara* which Sachs equated to the *vīṇā* harp (1940, p. 152). Other early instances of the *vīṇā* in Sanskrit texts were examined in a series of publications by Coomaraswamy (1930, 1931, 1931a & 1937).

[100] E.g. *vaṃśa* of classical Sanskrit texts (*Raghuvaṃśa* of Kālidāsa 2.12, *Mrcchakatika* 49.2) is "reed pipe" (but *vaṃśaka*, is "bone pipe"); other reed pipes: *veṇu* (e.g. *Mahābhārata*, *Harivaṃśa*, *Raghuvaṁśa* 19.35) and *veṇuka* (*Harivaṃśa* 15599). However, the cow-herd Kṛṣṇa plays the *veṇu* and *vaṃśa* and both have been translated "(reed) flute" (Stoler Miller, 1977, p. 24; Kinsley, 1979, pp. 95-103).

[101] Leonardo da Vinci arrived at the reverse evaluation. In his days bowed strings were less common than plucked ones. He observed that plucked sounds decayed quickly whereas sound of a winds could be sustained. Likewise, without a tape recorder the memory of a music performance also fades (unlike the painted canvas) and Leonardo diagnosed the two manifestations of sound decay as the *malattia della musica* (Winternitz, 1984, pp. 97, 219). As a result, he preferred winds and bowed string instruments.

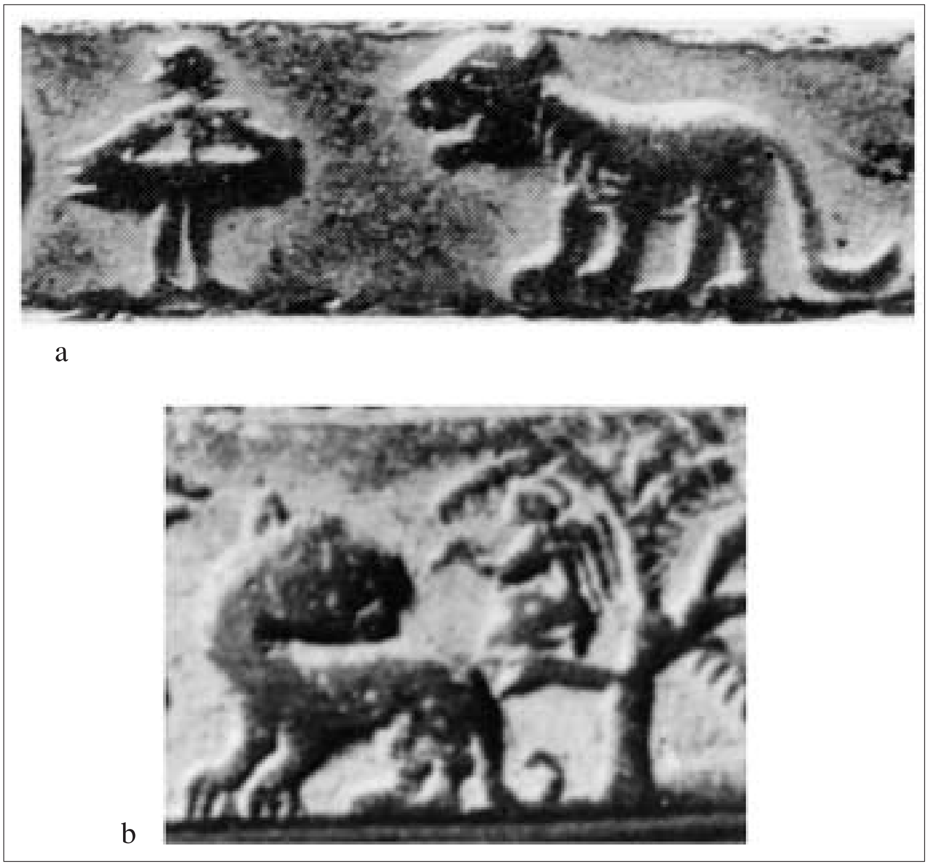

Figure 30. Tigers listening to musical instruments on two Indus seals.
a. Tiger and a two-sided horizontal drum. Seal H-182 A from Harappa.
b. Tiger and a piper. Seal M-478 B from Mohenjo-Daro.

12. Other ancient instruments that mimicked animal sounds

Ancient literature contains little documentation on animal sound mimicry. In particular, Xenophon and Arrian bypass the subject in their works (*Cynegeticus*) on hunting. But there is a report from Egypt written when Greek-speaking immigrants had settled in small enclaves (ca. 100 CE). Busiris, a city located near the middle of the Nile delta, was an important native center, while Naukratis, 60 km away on another Nile branch, had been settled by Greek immigrants (Boardman, 1999, pp. 118-121). The Egyptians in Busiris

Figure 31. Shamanistic scene on a cylinder seal from Togolok, Margiana (Hiebert, 1994a, fig. 6D).

complained that Naukratians used asses' bones for pipes and trumpets. For Busirians "even to hear a trumpet is a sin[102], because they think it sounds like the bray of an ass" (Plutarch, 1928, p. 373). Perhaps Plutarch wanted to ridicule the credulity of non-Greeks, but in passing he also documented a sound imitation close enough to horrify Egyptians.

13. Animals, humans, and music, ca. 2000 BCE

We are facing a world where music affects humans and animals alike. Was it depicted? Although the BMAC has no images of animals listening to trumpets, the Indus civilization (2500 – 1900 BCE) has two illustrations of music for large tigers. In one scene the animal views a drummer on the ground (fig. 30a, and note 17); in the other he turns his head toward a piper in a tree (fig. 30b, and note 15). Both tigers listen[103], just as Oxus animals would have done when trumpets imitated their call, although drums and pipes cannot mimic the tiger's roar. The scenes unfold approximately 1500 km southeast of the Oxus civilization. Mesopotamia lies at a similar distance in the southwesterly direction. It, too, had pictures of animals in musical contexts, although they tend to be players rather than listeners. Sumerian

[102] The malevolent deity Seth was sometimes represented with the features of an ass (Plutarch, 1928, p. 372, note *b*).

[103] One cannot know if the tigers are more excited by the musician's sound or meat. The former seems more likely, since it would be unnecessary to show instruments in the latter case.

scenes (ca. 2400 BCE) show donkeys plucking lyres and a harp while a fox shakes the sistrum (Rashid, 1984, figs. 8 & 31). In Egypt the idea of animal musicians occurred later and persisted longer: a lion plays the lyre 1150 BCE (Lawergren, 1996, fig. 5j) and a monkey strums the lute 150 BCE (Manniche, 1991, fig. 71). Such illustrations continue well into the first millennium BCE (Lawergren, 1998, p. 53) in the Near East. At this date Orpheus inherited the theme. When he played the lyre, animals listened and their savage hearts were tamed[104]. With time the story grew increasingly elaborate, and received much attention from poets and artists down through the Renaissance (Warden, 1982). Roman mosaics often showed lyrical scenes of Orpheus amidst phlegmatic animals (Jesnick, 1997). Indeed, the notion of animals-affected-by-music is widespread. Thompson lists folk-tales from around the world in which animals make, or listen to, music: a cat lures foxes with music; a tiger lets the hero escape to the strains of music; animals learn music (1955, vol. 6, p. 531); a bull lows musically, a bird plays timpani; a toad and a chameleon play the drum and the xylophone (1955, vol. 1, p. 421).

It is possible that Oxus trumpets and their animal context stimulated the belief that animals understand music. This lent human traits to animals, yet humans called the tune and remained in charge. In this world-view, animals and humans are intertwined symbiotically. Students of ancient iconography, mythology and religion have long been familiar with such a view, but it is less familiar to students of music history.

Shamanism provides another nexus of people, beasts, and music. Shamans beat drums dressed in animal garb. Contemporary practice has been explored by ethnographers (e.g., Eliade, 1964) and ethnomusicologists (Emsheimer, 1991; Rouget, 1985), but there is less certainty about ancient practice (Ripinsky-Naxon, 1992). A scene from Margiana (fig. 31) looks shamanistic[105]: a seated shaman is dressed in a lion's (?) mane, and he or she beats a round drum with a long stick; a person kneeling above the shaman waves objects with clusters of

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[104] The Orpheus myth was known already to Simonides, ca. 500 BCE: "Above his head there hovered birds unnumerable, and fishes leapt clean from the blue water because of his sweet music" (Edmonds, 1924, p. 311).

[105] Alternatively, the scene shows "two men with monkey heads holding a pole over which an acrobat is springing while a musician beats a large [round] drum. This is a ritual festival in which all the actors wear animal masks. The figure of the deity Shamash is at the top of the scene, thus stressing the deeply ritualistic character of the whole scene on the seal. The mysteries associated with the acrobatic feats performed to music may have been widely performed in ancient Margiana. The mystical character of such ceremonies is stressed by the fact that all the human characters were wearing animal masks" (Sarianidi, 1994, p. 394).

balls (rattles?); two "animals" hold a vertical pole while an acrobatic animal jumps over it; a hoofed animal performs a two-legged dance nearby, and a kneeling creature holds a long stick. Similar paraphernalia (drum, animal disguise, sticks) were indeed part of Central Asian shamanism as depicted on rock carvings several millennia before our era (Rozwadowski, 2001, pp. 71-82). These busy Oxus animals fit well into a world where living beings experience the power of musical sounds regardless of their position on the evolutionary tree.

14. Summary and conclusions

Eleven Oxus trumpets are known from controlled excavations at Astrābād, Tepe Hissār, Shahdād, and Gonur. They share many features with each other and with a large number of unexcavated trumpets from southern Bactria published here for the first time. Because of the consistency of design, all are likely to be genuine and have dates similar to the excavated material (ca. 2200-1800 BCE).

Oxus trumpets have the three basic shapes illustrated in figure 1: plain, bulb, and face trumpets. The latter type has one, two, or three faces modeled in relief on the exterior. Some of these possess high artistic merits, unusual for the time and place — and totally unexpected on trumpets at any age.

Many trumpets were made of silver or gold. The latter are often double trumpets where a gold trumpet is put on the outside of an inner plain trumpet. The preference for precious metals differs markedly from the tendency to use copper for general grave goods.

Because of their small size (ca. 8 cm length), some scholars have doubted that the items were real trumpets. But replicas play well and show that several design features cooperate to facilitate the sound production. The sound is not musical by any recent definition of the term, but its high pitch can mimic the calls of soft-voiced animals such as the female roe deer. If this sound is played at the time of rut, male deer would be attracted. The ability to lure animals, and trick them to approach, would have been useful in hunting — as it still is in some parts of the world.

A Zoroastrian myth relates that Yima, the first king, had a golden trumpet which he used to control animals. Some elements in the myth date back to pre-Zoroastrian times, i.e., before 1200 BCE, and could be based on memories of the Oxus trumpet. Indeed, that region was not far from the birthplace of Zoroaster. The trumpet's ability to lure animals fits the central theme of Yima's myth.

If used in hunting 2200 – 1800 BCE, one could understand the preference for precious metals. There is no information on the social conditions of hunting in the Oxus region, but if we take a cue from third-millennium Egypt and first-millennium Mesopotamia, large-animal hunt was a privilege of the élite. Those in the Oxus region may have used trumpets in the hunt and required them to be luxurious.

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But a most crucial contribution was Russian. Victor I. Sarianidi's successful 2001 season at Gonur provided well-timed additions to the corpus of excavated trumpets and his generosity in sharing the material gave critical mass to fig. 3.

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— APPENDIX —

Appendix: Catalog of Oxus trumpets

No.	Catalog Designation	Type	Provenance	Material	Length	Width at front	Figure	Museum/ collection	Collection date	Comment
1	E1	Plain E	Gonur	Copper	7.8	5.8	3	Ashkhabad	2001	Grave N 1758
2	E2	Plain E	UE(*)	Silver	7.1	6.4	6	unknown	1978-9	Pottier negative 890 bis
3	E3	Plain E	UE	Silver	6.8	5.5	6	unknown	1978-9	Pottier negative 890
4	E4	Plain E	UE	Silver	7.5	7.6	6	unknown	1978-9	Pottier negative 950
5	E5	Plain E	UE	Silver	6.0	4.3	6	unknown	1978-9	Pottier negative 1015; Pottier 1984, no. 313
6	E6	Plain E	UE	Silver	9.2	8.1	6, 9	Louvre, Paris	1977	Amiet 1978, fig. 4; AO 26425; Pottier negative 724; Amiet, 1988, fig. 19b
7	C1	Plain C	Hissār	Silver	11.7	ca. 2.9	3	Lost		Schmidt, 1937, H3225 (see table 1)
8	C2	Plain C	Hissār	Silver	11.4	ca. 1.7	3	Lost		Schmidt, 1937, H 3226 (see table 1)
9	C3	Plain C	UE	Silver	16.3	2.2	6, 9	Louvre, Paris	1970s	Inv. No. AO 31562
10	C4	Plain C	UE	Silver	11.0	1.8 (rear)	6	Louvre, Paris	1970s	Inv. No. AO 31568
11	C5	Plain C	UE	Silver	9.0	2.3	6	Louvre, Paris	1970s	Inv. No. AO 31567
12	C6	Plain C	UE	Silver	11.2	2.0	6	Louvre, Paris	1970s	Inv. No. AO 31563
13	C7	Plain C	UE	Silver	7.4	2.0	6	Louvre, Paris	1970s	Inv. No. AO 31565
14	C8	Plain C?	UE	Silver	9.5	1.6 (rear)	10	Louvre, Paris	1970s	Inv. No. AO 31566
15	C9	Plain C?	UE	Silver	10.0	2.3 (rear)	10	Louvre, Paris	1970s	Inv. No. AO 31564a
16	C10	Plain C?	UE	Silver	11.3	2.3 (rear)	10	Louvre, Paris	1970s	Inv. No. AO 31564b
17	B1	Bulb	Gonur	Silver	7.7	5.4	3	Ashkhabad	2001	Grave N 2143
18	B2	Bulb	Gonur	Silver	9.0	4.8	3	Ashkhabad	2001	Grave N 2003
19	B3	Bulb	Gonur	Gypsum	9	7.1	3	Ashkhabad	2001	
20	B4	Bulb	Hissār	Gold	7.9	ca. 2.3	3	Philadelphia		Schmidt, 1937, H 3224 (tables 1 and 4)
21	B5	Bulb	Astrābād	Gold	Unknown		3	Lost	1844	Table 5; De Bode, 1844, pl. XVI: 4; Rostovtzeff 1920, pl. III
22	B6	Bulb	Astrābād	Gold	Unknown		3	Lost	1844	Table 5; De Bode, 1844, pl. XVI: 4; Rostovtzeff 1920, pl. III

No.	Catalog Designation	Type	Provenance	Material	Length	Width at front	Figure	Museum/ collection	Collection date	Comment
23	B7	Bulb	UE	Silver	12.2	7.3	7	unknown	1978-9	Pottier negative 1851
24	B8	Bulb	UE	Copper	9.8	6.6	7	unknown	1978-9	Pottier negative 1871-1872
25	B9	Bulb	UE	Silver	9.5	6.0	7	unknown	1978-9	Pottier negative 1014
26	B10	Bulb	UE	Silver	12.3	7.6	7	unknown	1978-9	Pottier negative 1127; Pottier, 1984, no. 314
27	B11	Bulb	UE	Silver	8.1	5.6	7	unknown	1978-9	Pottier negative 1128
28	B12	Bulb	UE	Silver	7.8	(incomplete)	7	unknown	1978-9	Pottier negative 1016
29	B13	Bulb	UE	Silver	9.2	5.7	7	unknown	1978-9	Pottier negative 770
30	B14	Bulb	UE	Silver	8.4	5.0	7	Louvre, Paris	1985	AO 28504; Amiet, 1988, fig. 19a
31	B15	Bulb	UE	Copper	8.2	6.0	7	Private coll.		
32	B16	Bulb	UE	Silver	8.0	4.6 to 3.8	7, 9, 20	Private coll., New York	1970s	
33	B17	Bulb	UE	Gold	9.8	4.6	7	Private coll.		
34	B18	Bulb	UE	Gold	9.9	6.0	7	Private coll.		
35	F1	Face	Gonur	Copper	9.0	6.0	3, 24	Ashkhabad	2001	Grave N 2060
36	F2	Face	Shahdad	Copper	9.0	6.2	3	Iran-Bastan Museum, Tehran		Hakemi 1997, pp. 76-7
37	F3	Face	UE	Silver	12.2	8.2	8- 9	Louvre, Paris		AO 31013; Paris-Drouot, 1996, no. 603
38	F4	Face	UE	Copper	7.3	5.3	8, 18, 19	The Ron Garner collection, Sacramento, CA	1970s	
39	F5	Face	UE	Copper	10.5	7.5	8, 20-22	Anahita Gallery, Santa Fe, NM	1970s	Sarianidi, 1993, fig. 23
40	F6	Face	UE	Copper	10.0	5.2	8	Unknown		Drouot, 1981, no. 17
41	F7	Face	UE	Copper	8.2	6.2	8, 23	Private coll.		
42	F8	Face	UE	Gold	9.3	6.0	8-9, 15-17	Private coll.	1978-9	Pottier, 1984, no. 315
43	F9	Face?	UE	Silver	9.5	6.0	9-10	Louvre, Paris	1970s	AO 31561

UE = Unexcavated

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THE BOW IN THE ANCIENT NEAR EAST, A RE-EVALUATION OF ARCHERY FROM THE LATE 2ND MILLENNIUM TO THE END OF THE ACHAEMENID EMPIRE

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The Ancient Near East was the first region modern humans passed after leaving the African continent and where the first domestication of plants and animals took place. It is also the place where the first city-states developed. With the uprising of the cities, there is the inevitable stress, war and as a result military development. The study of the bow is therefore a specific way to approach the influence and development of humans in the context here outlined, covering far more than just technological evolution. This paper concentrates on the use of the bow in Mesopotamia, Urartu and Iran. In addition we will also take the archery of the Egyptians, Hittittes, Scythes and the Levantines into account, covering almost the entire Near East from an era ca. the late 2nd millennium B.C. till the advent of Alexander the Great (ca. 330 B.C.). The aim of this study is the analysis and (re-) interpretation of the bow as seen in the historical events of the Iron Age and Achaemenian period. In the first chapter we discuss the specific properties of the bow, followed by a synthesis of the bows used prior to the first millennium. Secondly we will consider the classification of the bows employed by the Assyrians, Babylonians, Urartians, Northwestern-Iranians and Achaemenids, by shape, type, construction materials, methods of release and the stringing technique. This paper is an attempt to review the important works of other scholars[1] who have previously dealt with this subject. It is hoped that objectivity can be reached by utilizing a different systematic approach.

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[1] Bonnet (1926); Yadin, (1963); Hrouda (1965); Salonen (1965); Rausing (1966); Madhloom (1970).

1. The bow, parts and actions

The bow consists essentially of two basic elements: the body and the string (Fig 1.1). The surface farthest from the string is called the back; the inner surface is called the belly. The curve above the grip, the point where the bow is held (normally the centre of the bow), we call the upper limb (or arm), the one below the grip consequently is the lower limb. From the ears, at the end of the arms, the string can be attached using a groove or simply by knotting and using the friction of the materials utilized[2]. To be able to distinguish between the different kinds of bows we will now propose a differentiation using shape and structural composition, hence typology.

Four shapes can be discerned using the profiles of the bow[3] (Fig. 1.2). The first is a single convex arc, created by simply bending the body of the bow. When releasing the arrow these kinds of bows create a rocking motion due to the fact that the string on its way back generates a tension which flows from the extremities of the arms to the grip[4]. A more elaborate profile is recognized by the double concave shape of the recurved bow. More energy is given to the arrow because the tension is continuous which results in a catapult-like effect[5]. Furthermore this second type is a more balanced bow which does not create the rocking motion of the single arc bow[6]. To create more tension it is necessary to reduce the space between the hand at the grip and the one pulling back the string[7]. This has lead to the development of the double convex bow, recognizable as a B-shape, or the shape of a Cupid upper-lip. Here the distinctive outline can be the result of the combination of different materials or the use of fire to shape the body[8]. Our fourth and last profile is the outcome of the use of stiff materials and the typical placing of the arms at the grip. This results in a triangular shape with an angle of 120° at the grip and 30° at the ears.

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[2] Harding, 1989, p. 94; Yadin, 1963, p. 6; Pope, 1974, p. 3.

[3] A problem arises when bows are depicted drawn back by the archer. No matter their shape when not drawn, most of the bows occur as a single convex arc when drawn. That's why only "non-active" bows are implemented in this typological reconstruction.

[4] McEwen, 1979, p. 92; Miller, McEwen, Bergman, 1986, pp. 180-181.

[5] These kinds of bows are also called reflex-bows (Bonnet, 1926, p. 123).

[6] McEwen, 1979, p. 92.

[7] Protoliterate examples of this hypothesis were found in Chogha Mish (Delougaz, Kantor, 1996, pl. 150, 151).

[8] Bonnet, 1926, p. 123; Yadin, 1963, p. 7; Rausing, 1966, p. 135.

The arms have the tendency to curve away from the string, as the recurved bow[9]. Thus it can also be called a reflex-bow.

Apart from using the outline of the bow as depicted on many artefacts we will also present an alternative manner to recognize certain types of bows, based on the different materials used and the manner in which they have been combined to create the finished bow. This method of recognition is a difficult one, given the fact that not a single example has been excavated in closed context in over one hundred and fifty years of work in Mesopotamia and Iran. Nor has there ever been an attempt in the past to clarify and distinguish between different depictions of bows on artefacts or surviving cuneiform texts. So it would be easy to put aside such an attempt and decide that using shape is an effective approach. However this would imply ignoring the technology, craftsmanship and skill of manufacture, also it is important to consider that the shapes of bows are usually the result of their structural composition. The different shapes are in fact a consequence of the use of certain materials, adapted to the pressure and tension the body of the bow has to withstand when drawn. All this benefits the use of a typological differentiation as the structure of the bow will have a certain shape as result. Therefore the above morphological and the following structural differentiation (Fig. 1.3) can be applied to the past. The suggested order of presenting the different types of bows also applies to a chronological sequence as their composition gets more complex, if one accepts the fact that more complicated types of bows only occurred after the simpler ones had been mastered.

The easiest way of making a bow is taking a single long piece of wood, bending it into an arc and stringing it (hereafter referred to as "the simple bow"). The only way this simple kind of bow can be advanced is making the arms longer so that the distance between the two hands, when the bow is drawn, is enlarged. This is why these bows are the largest ones, with measurements of 150-220 cm[10]. Furthermore, the B-shaped profile can be applied to a single piece of wood, as has been depicted in Egyptian tombs[11]. The greatest disadvantage of these types of bow is that they easily break when drawn. To prevent breakage, a second type of pliable material is glued to the back, usually pliable wood although in some cases

[9] McLeod, 1958, p. 398; Yadin, 1963, p. 8, p. 81.
[10] The size of a bow is equal to the length of the string when attached to the ears.
[11] Yadin, 1963, p. 63.

sinew was used[12]. Examples of this bow have been found in Egypt[13], and while one would assume that it existed in the rest of the Near East, there is no evidence for it. A compound bow is more complex, it differs from the previously mentioned types simply by using more layers of the same material in its construction[14]. The body of this bow is made by joining two pieces of wood at the grip, partly overlapping, glueing them together and if necessary adding more layers of wood or sinew. After the compound bow the idea developed to join different kinds of materials and combine them in such a way that they strengthen each others pliability and toughness. This resulted in the composite bow made of wood, sinew, horn and bone. The different materials are glued together in such a way that the arms curve back, even when stringed (= recurved bow)[15]. In certain cases (depending on the construction techniques) a composite bow can have a single arc profile, resulting in the weakest of the composite bows. B-shaped composite bows are more powerful and experiments[16] have shown that triangular composite bows are twice as strong as simple bows. The advantage of composite bows is that they can be made smaller because they retain their strength through the correlation of the different materials. They therefore have more strength, far more range and their small size results in more mobility.

2. Introduction and development of the bow in the Ancient Near East prior to the first millennium[17]

The depiction of a double convex non-composite bow from Arpachiyah[18] dating to the mid 5th millennium is the earliest representation of a bow in Mesopotamia. In Chalcolithic Iran we find simple drawings on pottery which have been interpreted as bows[19]. However these are isolated examples, it is not until the Uruk/Djemdet Nasr period that regular depictions of

[12] Bonnet, 1926, pp. 120-121; Potratz, 1963, p. 22; Pope, 1974, p. 39.
[13] Bonnet, 1926, pp. 133-135.
[14] Harding, 1989, p. 98; Yadin, 1963, p. 8.
[15] Bonnet, 1926, p. 121; Rausing, 1966, p. 155; Pope, 1974, p. 39; McEwen, 1979, p. 91; Mayer, 1995, p. 467.
[16] Miller, McEwen, Bergmann, 1986, fig. 1.
[17] D. Collon has already written a brief history of the bow (Collon, 1983, pp. 51-56).
[18] Hijara, 1980, fig. 10.
[19] Two sherds from Susa and Djowi (Le Breton, 1947, fig. 30,16; Amiet, 1966, p. 35; Korfmann, 1972, pl. VI.1).

simple bows appear[20]. It is also in this period that the introduction of recurved composite bows can be attributed in Uruk[21], Jericho[22] (end of 4th millennium) and in Iran[23] (2nd half of the 4th millennium). This composite reflex-bow was at more or less the same epoch used during the first two dynasties in Egypt but it took a further 1500 years to be generally accepted during and after the 18th dynasty[24]. Before this time the people living near the Nile, Euphrates and Tigris used the *arcus*, the simple bow[25] or the double convex bow[26]. In the last stages of the 3rd millennium and the beginning of the 2nd millennium B.C. we still find the simple convex bow in Mesopotamia and the Levant[27]. This short story by no means is complete as we have to consider that we are only using illustrations of bows. It is certain that the bow was used long before it was depicted for the first time. This is evident in the evidence for the emergence of arrowheads (see Table 1).

The recurved composite bow existed for many centuries, however it was not until the rule of Sargon I and especially after the Akkadian rulers that it became commonly used[28]. The reason for this slow transition can be attributed to the difficulties that arise with the complicated construction of the recurved composite bow[29]. The structure of the

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[20] Mecquenem, 1934, fig. 30.2; Strommenger, 1962, pl. 18.

[21] Parrot, 1960, fig. 92, p. 75; Moortgat, 1966, no. 1; Moortgat, 1967, taf. A2; Amiet, 1972, no. 600-602, 604, 688, 689, 691, 695, 1014; Buchanan, 1981, fig. 140a. This is enough evidence to state that the Sumerians knew how to make a composite bow.

[22] Korfmann, 1972, p. 17.

[23] Amiet, 1966, fig 37, p. 77, fig. 45, p. 86; Vanden Berghe, 1986, p. 145; Delougaz, Kantor, 1996, pl. 150, 151.

[24] Rausing, 1966, pp. 70-72.

[25] McLeod, 1958, p. 397; Yadin, 1963, p. 63; Rausing, 1966, p. 73; Korfmann, 1972, p. 217; Drower, 1973, p. 497; Miller, McEwen, Bergman, 1986, p. 180; Mayer, 1995, p. 467.

[26] Clark, Phillips, Staley, 1974, fig. 1; Fischer, 1962, pp. 50-52; Cialowicz, 1990, pp. 63-64.

[27] Proven by a contract between Ebla and Ur for 500 wooden bows (Michalowski, 1978, p. 36) and the fact that we have to wait until the 15th century until we find recurved composite bows in Ras Shamra (Moorgat, 1967, pl. 234).

[28] Salonen, 1965, p. 185; Boehmer, 1965, taf. LXI, nr. 724; Moortgat, 1967, pl. 155-156, taf. F; Dalley, 1995, p. 114; Mayer, 1995, p. 467. To the same period great amounts of arrowheads can be dated (Mallowan, 1947, pp. 180-182).

[29] It took several months, sometimes even years to complete a composite bow (McLeod, 1958, p. 400; Brentjes, 1996, p. 37).

composite bow on the other hand, a combination of wood, horn, bone and sinew, is not an uncommon one in Mesopotamian art[30]. It is however dangerous to assume that the birthplace of the composite bow has to be Mesopotamia. An independent development could arise at any place where there is a lack of wood[31]. In addition, it is more likely that the development of composite bows took place in a culture where there has been a long tradition of archery. The Levant, Iran and Anatolia (viewing the long history and amount of arrowheads found), the Arabian Peninsula[32] and the Turkmenian steppe[33], are to be taken into consideration.

Near the Angara-river in Siberia the oldest example (3rd millennium) of a triangular composite bow was found[34]. During the middle part of the 2nd millennium it became the general type of composite bow in the Near East. The Anatolian Hittites possibly where the first ones to adopt it[35]. The Assyrians and Babylonians[36] used this type in combination with the convex composite bow.

Table 1. Introduction of bow and arrow in the Ancient Near East

	Depictions (see text)		*Arrowheads*[37]
	Simple bow	Composite bow	
Mesopotamia	middle 5th millennium	4th millennium	middle 6th mill.
Iran	6th – 5th millennium	2nd half 4th millennium	5th millennium
Egypt	5th millennium	end 4th – begin 3rd mill.	7th millennium
Levant	end 5th millennium	End 4th millennium	11.000-8500

30 See the excellent artefacts found by C.L. Woolley at Ur (Woolley, 1934).

31 The presence of trees isn't a guarantee for construction of bows as only a few kinds of wood are useful.

32 Korfmann, 1972, p. 279.

33 Rausing, 1967, p. 149; Korfmann, 1972, p. 217.

34 Brentjes, 1996, p. 37.

35 Hittites, 14th/13th century B.C. (Bittel, 1976, fig. 201, 202, 206, pp. 180-184) — in combination with the recurved composite bow (Bittel, 1976, fig. 291, p. 257); Levant (Bonatz, Kühne, Mahmoud, 1998, p. 122; Collon, 1998, p. 33, no. 11); Egypt (McLeod, 1970, p. 31); Medio-Elamite Iran (Weidner, 1939, fig. 68, 110; Porada, 1970, p. 40 nr. 36, p. 41 nr 37).

36 Rausing, 1966, p. 85.

37 Korfmann, 1972, pp. 64-82, 120-131; Bergman, 1981, p. 119; Rollefson, 1998, p. 106; Bonatz, Kühne, Mahmoud, 1998, p. 28.

3. The bow in the neo-Assyrian kingdom

A reconstruction of the bow during Assyrian rule must rely on the rich art production of that era however despite the profusion of reliefs, seals, ivory, painting and textual sources available to us not one bow has been found in the Mesopotamian plain. So we must rely only on the depictions and representations of the Assyrians and their allies.

3.1 Outline and composition

Three easily recognized profiles can be deduced from the Assyrian artefacts: convex, triangular and recurved. The convex one has to be a composite bow, as its short length (110 – 125 cm) would make it insignificant as a simple convex bow[38]. As we have seen, this type of bow was already in use in Mesopotamia before the 1st millennium. The same can be said about the triangular shaped bow, the second profile recognizable on Assyrian artefacts and favoured from Ashurnasirpal II till Ashurbanipal (Table 2). As its convex counterpart it is 110-125 cm in size, oval or trapezoid in section and about 2 – 3 cm thick[39], as can be deduced from Egyptian parallels (Fig. 3.1-8). On some illustrations[40] the arms end in a piece that has been shoved over the extremities of the arms (Fig. 2.10), which is evidence of rigid ears[41] and a confirmation of the composite structure of this weapon. Extra proof of the combined structure of these two types of bow is given by the fact that we often notice them in bowcases[42], only useful when different materials are applied and have to be protected against influences of the climate.

[38] According to Madhloom, Hrouda, Bonnet and Yadin this bow has to be a simple convex bow (Bonnet, 1926, pp. 151-152; Yadin, 1963, p. 6; Hrouda, 1965, p. 83; Madhloom, 1970, p. 58). But as we will see there are certain points that show the opposite.

[39] These measurements are taken at the grip which is thicker than the arms as it combines all the materials in one point.

[40] Examples where ears and arms are depicted in different colours: a glazed sherd, a brick and a wall painting (Meikner, 1915, fig. 201, p. 117; Hrouda, 1965, p. 83; Börker-Klähn, 1992, fig. 4).

[41] The nomads of South-Siberia used a bow with ears and grip made out of bone (McLeod, 1958, p. 398; Rausing, 1966, p. 84). This enhances stability but also power because they add to the catapult-effect of the returning string. During their migrations to the south the Iranian peoples might have brought it with them.

[42] Parrot, 1961, fig. 145; Barnett & Falkner, 1962, pl. LIX; Hrouda, 1965, taf. 20.6; Madhloom, 1970, pl. XXIV, LI3; Albenda, 1986, pl. 134.

A recurved profile can sometimes be seen on cylinder seals and artefacts made out of metal[43]. This profile without a doubt is the result of a composite structure but as Table 2 shows, it is the exception and most likely the outcome of badly depicted triangular composite bows. The material worked (stone and metal) and the small illustrations, combined with the fact that the triangular bow in some cases has arms that tend to curve outward could confirm this.

Another useful source of information are the Assyrian cuneiform texts that notify us of the existence of the *Akkadian* bow (probably linked with Assyria and Babylonia) the *Cimmerian* and "*Ansanian*" bow[44].

Table 2. Assyrian bows: profile[45]

King	*Triangular (%)*	*Convex (%)*	*Recurved (%)*	*Number of archers*
Ashurnasirpal II	97	–	3	45
Shalmaneser III	97	–		4
Tiglath-pileser III	72	28	–	8
Sargon II	88	12	–	9
Sennacherib	100	–	–	4
Ashurbanipal	63	37	–	18

3.2 Material reconstruction

The lack of evidence as to what materials the Assyrians used to manufacture their composite bows leads us to search for parallels in Egypt and the

[43] Porada, 1948, pl. XL, nr. 621, 622, LXXXVIII, nr. 612, XCVII, nr. 664; Seidl, 1985, fig. 1.

[44] *Qaštu* or *qaltu* (Salonen, 1965, p. 40, 42; Dandamaev & Lukonin, 1989, p. 226).

[45] Using the following publications and my own observations in the British Museum and the Louvre: Unger, 1925, taf. I, III; Weidner, 1939, fig. 79; Porada, 1948, pl. XL, LXXXVIII, XCVII; Barnett, 1960, pl. 51, 53, 56, 60, 63, 83, 91, 97, 118, 120, 167; Parrot, 1961, fig. 112, 116; Barnett & Falkner, 1962, pl. XI, XV, XXVII, XXXI, XXXV, XL, XLI, LII, LIV, LIX, LXXIII, LXXV, LXXVI,, LXXVIII, LXXXVI, CXVI, CXVII, CXIX, CXXII; Strommenger, 1962, pl. 214, 257; Yadin, 1963, pp. 388-389; Hrouda, 1965, taf. 43.4, 59.3, 64.3; Winter, 1966, p. 151; Madhloom, 1970, pl. I, XVI, XXIV, XXIX, XXXVII, XXXIX, XLVIII, LVII; Mallowan & Davies, 1970, pl. V, VIII, X; Reade, 1972, pl. XXXIV; Barnett & Lorenzini, 1975, pl. 12, 28, 30, 34, 56, 67, 83, 105, 115, 134, V; Basmachi, 1975-1976, pl. 147; Paley, 1976, pl. 4, 18; Meuszynski, 1981, taf. 1, 2, 5, 8, 9, 11, 16; Seidl, 1985, fig. 1; Albenda, 1986, pl. 87, 95, 102, 103, 118, 128, 134, 136; Collon, 1995, fig. 123, p. 155; Curtis & Reade, 1995, p. 70; Barnett, Bleibtreu, Turner, 1998.

Levant. For example the Egyptians manufactured their triangular bows from wood, horn and sinew[46]. During the 3rd dynasty of Ur we find evidence of strong "wooden" bows[47] and the people from Egypt and Ugarit used acacia, cedar, lemonwood and johns bread[48]. In Canaanite mythology a bow is made of "tendons from wild bulls … horns from wild goats … sinew from the hocks of bulls"[49]. Nowadays usually the wood of the willow tree is used[50]. The horn is taken from an ibex, water buffalo or gazelle and the sinew of a bull[51]. In some cases the bark of trees was used as a final layer[52]. According to Contenau the rigid ears were made of ivory[53]. It is difficult to prove this, as no ivory artefacts have been found in a shape that can be used for a bow's ear[54]. Ivory as well as bone or horn could also be used. Copper, silver and gold on the other hand have been used to create complete, or parts of bows, as textual evidence[55] and excavations[56] reveal. These must have been used as ritual counterparts of wooden bows as experiments[57] have shown that they could not be used in combat and the fact that they were often sacrificed to the gods[58]. For the Egyptian bowstrings sinew, linen and gut were used[59]; later Islamic strings were made of silk, leather and the gut or skin of a dear. An exact reconstruction of the Assyrian bow (triangular and convex composite bow) is thus only possible on a hypothetical base. Mathematical modelling on the other hand has shown that the composite combination of the triangular bow gains maximum strength and pliability out of its materials[60]. In other words, it is not possible to enlarge the triangular bow or to change the specific combination of materials. Therefore the Assyrians will have come to an established

[46] Many examples in McLeod (1970, pl. XIV) and Rausing (1966, fig. 35).
[47] Salonen, 1965, p. 41.
[48] Rausing, 1966, p. 86; McLeod, 1982, p. 52.
[49] Allbright & Mendenhall, 1942, p. 228.
[50] Pope, 1974, p. 36.
[51] Müller, 1893, p. 304.
[52] Brunton, 1938, p. 251; McLeod, 1958, pp. 399-400; McLeod, 1970, pp. 31-32.
[53] Contenau, 1964, p. 132.
[54] No ivory bow-ears were found in the publications of Mallowan & Davies (1970), Muscarella (1980), Herrmann (1986) and Wilkinson (1975).
[55] Salonen, 1965, p. 42.
[56] Palestine (Müller, 1893, p. 151) and Susa (De Morgan, 1900, p. 107).
[57] Pope, 1974, p. 36.
[58] The sacrifice of a large copper bow for Ninurta (Salonen, 1965, p. 42).
[59] Bonnet, 1926, p. 149; McLeod, 1970, p. 33.
[60] http://snt.student.utwente.nl/campus/sagi/artikel/mathmod2/replica.html.

length of 110 – 125 cm after exercise and experimental creations and most probably after fatal occurrences during battles.

3.3 Evolution in attachment of the bowstring

The bows during the reign of Ashurnasirpal II end in a pommel-shaped knob (Fig. 2.1). The string is held in place by a notch or a groove. A closer look shows us that the outer layers of the arms do not go all the way to the ears, creating a central spine and a knob, useful for the attachment of a bowstring (Fig. 2.2-4). This type of ear was already in use during the 15th century[61] and it was preferred by Ashurnasirpal II and Shalmaneser III (Table 3). After their reign other types were favoured by the Assyrians but this first type still can be seen on a relief of Ashurbanipal[62]. Noticeable changes can be seen on the reliefs of Tiglath-pileser III, such as the bow ending in a duck's head. First appearing only as decoration (the string is attached below the head, Fig 2.5) but later more functional by knotting the string around the beak of the duck. This was facilitated by a groove on the duck's head to keep the string in place (Fig. 2.6). A stylised form can be seen on the paintings of Til Barsib (Fig. 2.9). Table 3 indicates a clear transition between type 1 and this last type. After the reign of Tiglat-pileser III the bow with the functional duck's heads is the main one. It is not clear where this type of attachment originated, as the Assyrians and other cultures show allies and enemies with it[63]. Two more adaptations have been made to differentiate the bow of the king with that of other archers: ears in the shape of a lion's head (Fig. 2.8) or the head of an eagle or falcon (Fig. 2.7). Heads of ducks, geese, falcons or geometric patterns were also used to decorate the haft of knifes[64]. So these may have been a symbol of war.

The technique of knotting the string to the ears can only be learned from excavated Egyptian bows and Early Islamic examples. Winding the string around the extremities, 10 to 12 times before knotting, is the Egyptian way, using a noose the Islamic one.

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[61] Strommenger, 1962, pl. 270, 271.

[62] British Museum BM 124.931, which corrects Madhloom (1970, p. 59) who mentioned Assur Ninari IV as the last king with this kind of attachment.

[63] Elamites, Philistines, Urartians, Hamatu, Bīt-Agūsi, Bīt-Adini, Bīt-Lahiri, Subria (Anonymous, 1936, p. 275; Weidner, 1939, fig. 68, 110; Wäfler, 1975, p. 32, 139, fig. 117, 126, 145, 154, 165).

[64] Paley, 1976, p. 38.

Table 3. Assyrian bows: attachment of bowstring (see Fig. 2)[65]

King	*Pommel-shaped (%)*	*Duck's head, decorative (%)*	*Duck's head, functional (%)*	*Lion's head (%)*	*Eagle, falcon head (%)*	*Number of archers*
Ashurnasirpal II	96	1	–	–	3	59
Salmaneser III	100	–	–	–	–	2
Tiglat-pileser III	20	25	55	–	–	20
Sargon II	–	–	100	–	–	11
Sennacherib	60	–	40	–	–	5
Ashurbanipal	4	–	92	4	–	27

3.4 Methods of releasing the arrow and drawing back the bowstring

The different ways of arranging the fingers round the bowstring is in most cases clearly indicated on the reliefs of the Assyrians (Fig. 4). Three techniques can be seen and as Table 4 shows, the Assyrians preferred to use the primary technique (Fig. 4.1)[66]. A fourth method, known as the 'secondary' (Fig. 4.2) may also have been used. However despite some evidence for its use in Egyptian artefacts[67], there is little evidence of its use on Assyrian examples.

The different ways of pulling the bowstring gives some evidence of the strength of the Assyrian convex and triangular composite bows. As indicated by less powerful bows like the simple convex bow[68] the primary technique is only an advantage when the tension of the bow is less than the pressure a person can put on his thumb and index finger. Composite bows are so strong that you need a hook-like finger setting to be able to draw back the string. Nevertheless it is the primary technique that in most cases (almost 75% of the times) has been used to draw the composite bows of Assyria. This is a clear indication that despite past assumptions their strength was not quite so impressive. According to Bonnet[69], the Assyrians themselves are to blame for not depicting the

[65] See Table 2 for references.

[66] Descriptions of the different techniques can be found in the publications of Luschan and Harding (Luschan, 1891, pp. 670-673; Hardin, 1989, pp. 94-95).

[67] Hančar, 1972, pp. 16-17.

[68] Like those at Tell Halaf (Parrot, 1961, fig. 97, 99).

[69] Bonnet, 1926, pp. 151-152.

actual technique they employed. He says it is probable that sculptors carved archers in the primary technique when instead they should have depicted the tertiary method. Were ignorance and conservatism the principal aspects of Assyrian art? Two hunderd years of almost continuous artwork says the opposite. The warriors, rulers and ruthless Assyrians would have chosen the contrary. It is assumed that the army of Assyria and its kings never would accept that sculptors were fashioning the mighty Assyrians drawing a bow with an inferior technique only used for simpler non-composite bows. Furthermore it is the majority of the available artefacts, covering a wide area and two centuries, which illustrate the primary technique.

Another aspect of archery is where to put the top end of the arrow: to the left or to the right of the body? *Irtu*, Akkadian for "arrow-groove of a bow"[70] is a clear indication that somewhere near the grip there was a groove to guide the arrow. There is however no suggestion on the Assyrian reliefs of where this groove was. Table 4 shows the results of what these reliefs from Nimrud, Nineveh, Khorsabad, cylinder seals, ivory and other artefacts illustrate. It is clear that the majority of the time the left side was favoured, with only an equilibrium during the 2nd half of the 8th century (Tiglath-pileser III and Sargon II)[71].

Table 4. Drawing techniques and positioning of the arrow (see Fig. 4)[72]

King	*Draw Technique (%)*			*Positioning of the arrow (%)*		*Number of archers*
	Primary	Tertiary	Mediterranean	Left	Right	
Ashurnasirpal II	65	6	29	86	14	23
Shalmaneser III	100	–	–	–	–	3
Tiglath-pileser III	66	34	–	45	55	14
Sargon II	50	50	–	50	50	9
Ashurbanipal	83	17	–	76	24	7
Average	**73**	**21**	**6**	**65**	**35**	

[70] Salonen, 1965, p. 43.

[71] This in contrary to the claim of Mylius that the Assyrians, and Asians chronologically living after them, placed the arrow to the right side of the body (Mylius, 1905, pp. 222-223).

[72] See Table 2 for references.

3.5 Stringing of the bow

A different way to investigate the strength of the bows of the Assyrians is attempting to uncover the procedure by which they attached the string to the ears. This would have been impossible without a relief from Nineveh (Fig. 3.9) illustrating soldiers preparing bows for a battle. One soldier is shown squatting down, bending the body of the bow by placing the grip behind his knee and pulling the arms towards him. Another Assyrian knots the loose end of the bowstring to the remaining ear. This also serves as evidence that the triangular bow was in fact a composite one. Indeed it seems impossible to string a strong composite bow in the manner which the Egyptians did with their single bows (Fig. 3.10). Yet when one sees how the bow was drawn, evidence for its relative strength, then a confirmation is not extraordinary.

An extra clue is given by a text from Mari: "they should wrap the new bows with leather and bend the end to the centre"[73]. Dossin states that wrapping a bow with leather was to prevent it breaking while bending. By heating the bow, certain parts of the composite structure become weaker (especially the horn) and the glue also softens and no longer holds the separate parts together, the solution to this problem is wrapping the bow with leather. After the string was attached and the bow was sufficiently cooled down the leather was no longer necessary.

In summary we can conclude that there existed two distinctive Mesopotamian bows as used by the Assyrians in the 1st millennium. The first one, the convex composite bow, is a type already known in Mesopotamia since the second millennium, while the triangular composite bow originated during the same timeframe but in Hittite Anatolia. It is certain that the triangular bow was more powerful than the convex one, its profile projects a specific combination of materials. We can assume that it was the preferred type of bow and this must be the reason why the triangular bow is the most depicted bow on Assyrian artefacts. We must not forget however that the stress put on the string of these composite bows was not great[74], as the use of the primary method of arrow release has shown.

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[73] Dossin, 1950, nr. 9:4.

[74] A range of 230-260 meters is possible with the triangular composite bow (McLeod, 1970, p. 37).

The question remains why the Assyrians did not use the more powerful recurved composite bow as it was an important weapon for their neighbours, the neo-Hittites and the Urartians. We can assume that when at a certain point in time a stronger weapon was introduced, all neighbouring peoples would want to adapt the new weapon to their existing arms repertoire. It is even more striking when we recognize the Kassites, rulers of the Mesopotamian plain during the 2nd half of the 2nd millennium (prior to the neo-Assyrian era), with composite recurved bows[75]. All this is evidence of a static culture, borrowing types of bows which had been in use for many centuries and leaving aside a more modern recurved type. It is this conservatism which lasted until the end of the 7th century B.C. that probably contributed to the decline of the Assyrian kingdom in this period.

4. The bow during the neo-Babylonian period

Military expansion and warfare are certainly not terms normally associated with the neo-Babylonian period. However it is known that extension to the west was a major issue during the 6th century, and it is likely that the bow would have played an important role in this campaign. Exactly what type of bow was used can only be deduced from some textual sources and cylinder seals[76], many of which are small and without any great detail. However the angular profile, indication of the use of separate layers or materials, and the distinctive way the ears are illustrated, may be reminiscent of the duck's heads of the Assyrian bows[77], suggesting a composite structure. Therefore it is a possibility that this type of bow was the same as that used by the Assyrians before them. After the victory over the Assyrians there could have been a continuation of the use of the triangular and convex composite bow. Moreover we have to assume that during the Assyrian domination Babylon and other regions were supplied with Assyrian types of weapons. When we look at the size of the weapon on the seals (again ca. 110 – 125 cm), and the unclear way of drawing the bow with the primary

[75] Parrot, 1960, fig. 387.

[76] Porada, 1948, pl. CVIII, nr. 725, CXIII, nr. 749, CXVIII, nr. 778; Parrot, 1961, fig. 232, 233; Buchanan, 1966, pl. 42, nr. 646; Porada, 1999, fig. 47, p. 63.

[77] Particularly visible on the cylinder seal in Porada (1999, fig. 47, p. 63).

technique (Fig. 3.11), all this points to the bows of the Assyrians. The *Akkadian* bow in Assyrian texts therefore can be assigned to Assyria and Babylonia[78].

5. The bow(s) of Urartu

There is a big difference between the archaeological sources available for the reconstruction of the bow of the Urartians in comparison with what is available for the neo-Assyrian era. Nonetheless we may suppose that Urartu, who has been equal in power with Assyria for more than a century, must have had a considerable army at hand. Furthermore the bow was the most important weapon during the Iron Age and therefore interaction, not necessarily a friendly one, between the two nations will have taken place to improve the local weaponry. Of major importance are the arrowheads found during many excavations in Armenia, North-western Iran and Eastern Turkey[79]. But more important are the ca. 50 representations of archers on metal objects (shields, belts, pectorals, …) and cylinder seals. Consequently the information which is available should be sufficient to recreate a prototype of the Urartian bow.

5.1 Outline and composition

Depictions of archers (soldiers, gods and composite creatures) show us a bow with recurved profile, evidence for a composite structure (Fig. 5.5). The outward bending of the arms of the bow, even when not drawn, is evidence for a more powerful weapon than the Assyrian bows[80]. An effort to emphasize the extremities of the arms has been made but it is impossible to reconstruct the exact profile. Therefore it is impossible to know whether the heads of ducks and other animals familiar on Assyrian bows

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[78] Dandamaev & Lukonin mention neo-Babylonian soldiers during the reigns of Nebuchadnezzar II and Nabonid armed with Cimmerian and Scythian bows (Dandamaev & Lukonin, 1989, p. 226). It is difficult to acknowledge this as it isn't clear were the evidence to state this comes from. We know that the Assyrians used the Cimmerian bows (cf. supra), and that guards during the neo-Babylonian period were armed with Cimmerian arrows (Contenau, 1927, p. 144). So we can assume that the Babylonians knew of the existence of this type of bow but we have to confine the use of it.

[79] Wartke, 1993, fig. 90.

[80] An inscription of king Argishti II mentions a range of 950 cubit (Piotrovsky, 1969, p. 173).

were borrowed by the Urartians. However the use of rigid ears is demonstrated by the bent extremities of the arms and the clearly profiled ears.

Another type seen on Urartian artefacts is the convex composite bow with pommel-shaped ears (Fig. 5.1-2). We saw, when discussing the Assyrian bows, the composite construction result in a rounded profile. It is difficult however to recreate the exact origin of the weapon, but there must have been a close connection with the Assyrian convex composite bow, already known since the 2nd millennium. So it could be a local adaptation of an older weapon, resulting in a bow measuring 90 – 100 cm, somewhat smaller than the Assyrian one[81]. The recurved bow had the same measurements but its profile suggests a greater strength. The smaller size of the bows of the Urartians is not evidence for lesser strength as the combination of different materials already gives them an advantage on the simple bows. The main reason for creating smaller bows must have been the fact that the Urartians were good horsemen. A big advantage is created when one can shoot with a bow while riding a horse. The Assyrians used this technique too[82] but their longer bows must have hampered a fluent motion more than the smaller Urartians ones. This is demonstrated by a depiction of an Urartian horse-rider shooting while turning his upper body all the way to the rear of the horse[83] (Fig. 5.3).

It is possible to state that the combination of archery and horse-riding became possible with the introduction of the composite bows (4th millennium, see Table 1), because these can be made smaller. However more evidence is needed to support this theory. The origin of archery whilst on horseback is usually assigned to the nomads in the steppes of Central-Asia[84] and this hypothesis can be proved as we will see in discussing the bows of Iran.

[81] In one case, on a bronze shield from Anzaf, a triangular composite bow is shown (Fig. 5.4). Shape, measurement and type of ears resemble the bows of Ashurnasirpal II and Shalmaneser III. Also the composition and theme of the scene on the shield is comparable with the iconography of those Assyrian kings and therefore this unique illustration of a triangular bow in Urartian art must have been copied from Assyrian art by Urartian artisans.

[82] See many illustrations in Barnett, 1960, pl. 120, 167; Strommenger, 1962, fig. 257; Barnett & Lorenzini, 1975, pl. 115; Meuszynski, 1981, taf. 1, 2; Seidl, 1985, fig. 1; Albenda, 1986, pl. 134.

[83] This is shown on Assyrian reliefs as well but only when enemies are concerned (Budge, 1914, pl. XXIV).

[84] Pro and contra: Littauer & Crouwel (1979, p. 136) and Hančar (1956, p. 551).

Interestingly neither one type nor the other of the bows was favoured for depiction (Table 5). When we take a closer look we see that although soldiers, gods and composite creates all used the recurved bow, it was clearly preferred by the gods. The same can be said for the use of the convex bow by soldiers. This obvious distinction could have been a way to elevate the gods, with the more powerful bow, a means of emphasizing the difference with mortals. The same type of recurved bows appears on the sculptures of the neo-Hittites[85], although these seem somewhat larger. Likewise a connection can be made with the Scythes. Some Urartian archers use a bow with asymmetrical arms, the upper arm being longer than the lower one[86]. This irregular shape is one of the main features of a type of bow used by the Scythes (cf. infra). This analogy together with its small size, a feature drawn from the northern steppes, is an indication of inspiration from the north. A relationship with the Iranian peoples settling and migrating southwards is another potential sphere of influence as their bows used in Achaemenian times are of similar typology.

Table 5. The Urartian bow, profile and distribution[87]

	Convex (%)	*Recurved (%)*	*Number of archers*
Percentage of depiction	41	59	49
Typological distribution			
Soldiers	71	29	21
Gods	5	95	19
Composite creatures	45	55	9

[85] Yadin, 1963, p. 367; Bittel, 1976, fig. 291.

[86] Merhav, 1991, pl. 47.

[87] Using the following publications: Piotrovsky, 1950, fig. 50; Barnett, 1963, fig. 41, 47; Van Loon, 1966, pl. XXXVIII, XXXIX, XL; Tasyürek, 1975, fig. 2, 5, 15, 16, 17, 18, 19, 21; Tasyürek, 1978, fig. 1; Erzen, 1978, pl. XXXVIII; Vanden Berghe & De Meyer, 1982, fig. 31, 32; Calmeyer & Seidl, fig. 1, p. 105, 1983; Eichler, 1984, pl. 4, P.2, G.11, G.14, G.16, H.1; Işik, 1985, fig. 1; Maass, 1987, taf. 6-8; Merhav, 1991, fig. 4, p. 167, fig. 47, fig. 4, p. 119; Wartke, 1993, fig. 28; Born & Seidl, 1995, fig. 47, 69, 72, 74, 75, 76, 77; Belli, 1999, pl. 42.

5.2 Material reconstruction

A search for the materials used for the manufacture of the Urartian bow is only possible when assuming that the Urartians used the same production technique as in the rest of the Near East. The profile, size and use of a bowcase[88] (to protect them from the Near Eastern climate) verify the use of different materials for the recurved and convex bows. But no bows have been found during excavations in former Urartu, and no direct analogy can be drawn with Egyptian bows. Therefore an hypothethical reconstruction should include wood, horn or bone and sinew. The same can be said concerning the bowstring. The string on the convex composite bow could have been made out of the same materials as its Assyrian equivalent. And we may assume a stronger maybe layered bowstring on the recurved bow, as on Medieval Indian bows[89], as it has to withstand a larger force.

In the description of his 8th campaign Sargon II mentions the pillage of the temple of Muşaşir[90] and the silver and golden bows claimed as part of the booty. A ritual use for these bows is confirmed by the context, their precious materials and textual evidence[91]. In addition it could be these Urartian metal bows that are mentioned in other Assyrian texts (cf. supra).

5.3 Methods of releasing the arrow and drawing back the bowstring

In only one case we can clearly see how the fingers were arranged to draw back the string of an Urartian bow (a convex type) while holding the back of the arrow (Fig. 5.1). It is the primary technique so frequently seen on Assyrian artefacts. So we can relate the manner of drawing back the Urartian convex composite bow with the Assyrian convex bow and maybe assume a similar composite structure as the strength of the bow, drawn from the composition, demands a certain kind of releasing method. The strength of these convex composite bows, their profile and ways of

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[88] Tasyürek, 1975, fig. 7; Tasyürek, 1978, pl. 1-3, 7, 8, 10, 27, fig. 2, 8; Merhav, 1991, fig. 4; Born & Seidl, 1995, abb. 76; Caner, 1998, taf. 1-8, 12-14, 15-17, 20-24, 56-64, 67-68, 76-80.

[89] McEwen, 1979, p. 94.

[90] Merhav, 1991, pp. 11-12, 29.

[91] Text from Rusa I from Karmir Blur where it is stated that "holy weapons" were sacrificed to the god of war Haldi (Merhav, 1991, p. 24). Many bronze shields, helmets, quivers, arrow heads etc. have been found during excavations, it must be these kinds of artifacts that Rusa I was referring to.

releasing the arrow as basic motivation, was of no comparison with the recurved bow. It is not known what type of technique was necessary to draw back the bowstring of an Urartian bow type, however it is supposed that it must have been the tertiary or Mediterranean method because of the far greater stress placed on the bowstring and the analogous use in Luristan[92].

Of special mention are shark fin shaped hooks[93] (Fig. 5.5) attached to the forearm-protection[94] of the left arm. Their purpose is yet unknown. An aiming device or instruments to protect the forearm and keep the bowstring at hand are possible suggestions.

6. The bow in Northwestern-Iran (ca. 1200-800 B.C.)[95]

Only a dozen illustrations from Hasanlu and Marlik[96] are available to us for reconstructing the bow in use in Northwestern-Iran during the transition from the 2nd to the 1st millennium B.C. (ca. 1200-800). Furthermore we have to deal with very small drawings, so details like the setting of the fingers on the bowstring, are lost to us. Nonetheless it is possible to recognize

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[92] Although many artefacts from Luristan are products of unscientific excavations we want to use them only because their depicted archers show us the tertiary and Mediterranean method and the recurved composite bow (Calmeyer, 1969, taf. 5,1; Calmeyer, 1973, p. 51, F 8, p. 53, F 9). So no matter where they come from, and no matter who dug them up, they still can give us a glance of archery in the past (forgeries not included). An exception is a depiction of an archer on a bronze bowl, regularly excavated at Chamahzi Mumah, Iron Age III (Haerinck, Overlaet, 1998, fig. 37-3). The archer is using the primary technique to draw back a bow with recurved ears (duck's heads?).

[93] Born & Seidl, 1995, fig. 76, 77.

[94] A study of these armguards has been made by Born & Seidl (1995, pp. 85-90). They were necessary to protect the forearm from the bowstring on its way back after the release of an arrow.

[95] This synthesis is restricted to the Northwestern part of Iran. The Iron Age of Luristan has been put aside given the problematic aspect surrounding the many (forged and/or irregularly excavated) artefacts from that area. Some examples of archers on these artefacts can be found in the publications of Calmeyer (1969, 1973, 1980, 1984), Mahboubian (1997), Vanden Berghe (1982), Godard, Godard (sd), De Waele (1982), Parrot (1961), Ghirshman (1963). A bronze bowl depicting an archer, excavated at Chamahzi Mumah (Haerinck, Overlaet, 1998, fig. 37-3), is the only acceptable piece of evidence for archery in Iron Age Luristan known to us. But as the archer is illustrated with a drawn back bow, the outline is unrecognizable.

[96] Using the following publications: Porada, 1965, fig. 60; Wilkinson, 1975, fig. 15, p. 40; Huff, 1984, fig. 7, p. 232; Muscarella, 1980, fig. 51-52; Amiet, 1986, fig. 4; Marcus, 1996, pl. 29; Negahban, 1996, p. 209, fig. 18.

a triangular type of composite bow (Fig. 3.12). The way of illustrating even makes it possible to distinguish the different parts of the bow joined at the grip. It is also possible to clearly see the application of rings, placed around the arms at variable distances[97], probably to prevent fracture. The depiction of an archer on a bronze bowl found at Hasanlu even shows us recurved ears (duck's head?)[98].

This triangular bow is the only type seen on NW-Iranian artefacts. A convex or recurved profile is never depicted. The empire of Urartu, to the west and north-west of NW-Iran, frequently conquered cities in NW-Iran. Why the NW-Iranians did not borrow the recurved Urartian type of bow is not known. It is established that the most important sphere of influence for the triangular composite bow for the Near East was Anatolia (cf. supra), a neighbour of NW-Iran. It is also known that it was used in Assyria during the 1st millennium. However responsibility for its introduction into NW-Iran is not possible to establish. A possible hypothesis is that the place of origin could have been Anatolia but that the continuing use must be attributed to Assyria, as the neo-Hittites preferred the recurved composite bow. What is more, the scenes where Assyrians put their bows on the tip of their feet are similar to that of the NW-Iranians. Whether the iconography was borrowed from Assyria–NW-Iran or NW-Iran-Assyria is not a matter of importance here. What is important is that size, shape and thematic presentation of bows and archery are similar and therefore also the type of bow may have been. Consequently the NW-Iranian triangular composite bow was most probably made of wood, horn or bone and sinew. A unique artefact on the contrary has been found in a grave, during regular excavations at Marlik[99]. It is a bronze bow, 31 cm long, exceptional in shape (convex with a triangular grip). Its size and material indicate that it is impossible to use, and the analogy with Assyrian, Urartian and Saka[100] metal bows of supposed ritual use cannot be ignored.

7. The Achaemenid Empire

The Achaemenids have left many depictions of archers on sculptures, gems, coins and cylinder seals. Their archenemies, the Greeks, are another

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97 In Egypt these were made of the bark of trees (Bonnet, 1926, pp. 119-120).

98 Muscarella, 1980, fig. 175.

99 Negahban, 1996, pl. 127-865.

100 Bronze bow in a grave (Tamdinskii) accompanied by an iron dagger and wooden bows (Yablonsky, 1995, p. 235).

important source for material reconstruction of Achaemenid archery. But as all non-Greek speakers where called *barbaroi*, we can expect an adjusted point of view from their part. Even so, many artefacts and ancient texts are available for the reconstruction of the typology of the bow of the 3rd quarter of the 1st millennium.

7.1 Outline and composition

The large empire of the Persians encompassed many peoples, the majority of which can bee seen on the sculptures of Persepolis[101]. This mixture of ethnicity assumes many distinctive material cultures. However it is difficult to define different types of bows and characterize them as part of a particular people in the great empire. Herodotus mentions several types of bows and ascribes them to specific people but an exact reconstruction of the structure and morphology is impossible[102]. It can be assumed that the Assyrians and Babylonians, considering their conservatism, still used the Akkadian type of bow (cf. supra).

The first type of bow that can be described is the Yrzi-bow. It is a carinated recurved bow made out of wood, sinew and horn (Fig 6.1-2). On Greek pottery[103] and Persian cylinder seals[104] Persians can be seen with a bow with this outline but it is much smaller (90 – 110 cm) than the one that has been found in Baguz (Yrzi) which is 150 cm long and of Parthian date[105]. So it is possible that the Achaemenids used a smaller version of the later Parthian Yrzi-bow[106].

The more famous type of bow used in Achaemenian times, the Elamite bow, is the one depicted on the glazed bricks of Susa. It is easy to recognize as it has the same extremities as the Assyrian bows: duck's heads

[101] Schmidt, 1953.

[102] Lycians and Mylians used bows made of cornel; Bactrians and Caspians used bows of reed; Ethiopan bows were made of palm; The Arians and Sarangai adopted the bow of the Medians. The structural recomposition is only possible for the reflex (recurved) bow of the Arabs (http://classics.mit.edu/Herodotus/history.7.vii.html).

[103] Head, 1992, fig. 12 b, 21 b.

[104] Huff, 1984, fig. 14, 15.

[105] Bittner, 1987, pp. 148-149; Rausing, 1966, pp. 104-105.

[106] According to Ghirshman a prototype of this Yrzi-bow was used in Luristan (Ghirshman, 1963, p. 318). We found one Luristan bronze plate on which the carinated profile can be seen (Calmeyer, 1973, fig. 102), but one should remind the ethical hazard of using the Luristan bronzes so this has to remain a hypothesis. A similar kind of bow has been carved on a neo-Babylonian cylinder seal (Fig. 3.11).

(Fig. 6.4)[107]. The bowstring was attached to the beak of the duck, so a central groove must have held the string in place. The Assyrians already showed Elamites with bows ending in duck's heads[108] but it is not clear whether Assyrian types of bows or the particular Elamite type is illustrated. This type of bow is surely of composite structure as it has a recurved profile, 120 – 140 cm long[109].

Persians are depicted with this type of bow at Persepolis, Naqsh-i Rustam, Bisitun and Hakavan[110], on cylinder seals[111] and also on coins[112]. But in comparison with the bows shown in Susa it is much smaller (Fig. 6.5), almost an analogy of the Urartian recurved composite bows (90 – 100 cm). So it could be that the Persians adopted the Elamite bow and made it smaller, better suited to their needs. As with the Urartians, small bows are necessary for the cavalry. Usually the Medes are referred to as good horsemen, but Darius I mentions the use of bows in the infantry and cavalry[113]. So this is the second type of bow used and adopted by the Persians.

In the first half of the 7th century the Scythes penetrated the Near East. One of their bows has an asymmetrical profile (Fig. 6.6), the upper arm being shorter than the lower one. This type of bow, composite in structure, has been found in Central-Asia[114]. There is no evidence for its use by the Achaemenids. On the other hand another type of Scythian bow can be seen used by Achaemenids on Greek pottery (Fig. 6.3; 7.3-4). It has a double convex shape and was made of wood, horn and sinew[115]. This type, which

[107] Bittner says that the duck's heads are in fact metal rings attached to the ends of the arms of the bows (1987, p. 151). When we look at the clear sculptures at Susa and Persepolis however, we unmistakably can see the heads of ducks.

[108] Weidner, 1939, fig. 68, 110.

[109] Brentjes mentions a length of 60 – 70 cm (Brentjes, 1996, p. 33) which is possible when only measuring the visible bowstring. And according to Brown (in McLeod, 1970, p. 30) a Persian bow, of unknown provenance, has been found with a length of 127,5 cm, this could be an Elamite bow.

[110] Schmidt, 1953, pl. 24, 28b, 50, 56, 59, 64, 65, 83, 84, 87, 100, 101, 130, 160,173, 201; Hinz, 1969, fig. 31a; Schmidt, 1970, pl. 22, 23, 42, 43, 50, 51, 58, 63, 71, 78; Dandamaev, 1976, taf. XIII; Hinz, 1979, fig. 37; Roaf, 1983, pl. XLVIIIa,b.

[111] Mecquenem, 1927, p. 18, nr. 45; Frankfort, 1939, pl. XXXVIIc, d, h, n; Moortgat, 1966, taf. 90, nr. 771, nr. 768; Schmidt, 1957, pl. 8 PT4-844, PT4-366a, PT4-549; Dandamaev, 1976, taf. V-A.

[112] Farkas, 1969, pl. VIII, 12; Huff, 1984, taf. 22,2; Sekunda, 1992, p. 26.

[113] Sekunda, 1988, p. 72.

[114] Brentjes, 1995, abb. 29.

[115] Vos, 1963, p. 49.

was kept in a goryt, is ca. 100 – 120 cm long. The small size is again relevant for the cavalry and it is known that the Parthian shot (a horse-rider shooting an arrow while turning his upper body all the way to the rear of the horse), has been used with the Scythian bow and small Yrzi-bow[116] (Fig. 7.3). The Achaemenids must have been dangerous horse-riders[117]. So the Urartians and Scythes are recognized as specialized horsemen using a challenging manner of archery. Dispersion to the south of archery on horseback is for that reason a most reasonable explanation of evolution.

It is furthermore not sure whether it is this Scythian bow the Persians adopted, as Persian texts also mention the Cimmerian bow[118]. During this era it is sometimes difficult to tell apart the Cimmerians and the Scythians. The origin of the B-shaped bow used by the Persians is therefore uncertain. This account becomes furthermore complicated when one takes in consideration that the Medes used a B-shaped bow as well[119]. As stated by Bittner[120] two illustrations of the Median B-shaped bow in the Achaemenid period can be found: on the Alexander mosaic[121] and on a rock sculpture in Qizqapan[122]. Why these examples have been identified as Median models, is not known. The illustration of Medes in their particular dress, with B-shaped bows is not evidence for a particular type as the Median king Cyaxares sent his own children to learn archery from the Scythes[123]. Therefore we cannot be certain if the Medes used the Scythian double convex composite bow or adopted it and modified it to their own needs. Whatever the origin of this type of bow, it may be that it was of superior strength and had a range of ca. 500 m[124].

Summarized in Table 6 it is noticeable that the Elamite bow is the one which has been illustrated the most. It is however dangerous to state that it was the preferred type as most of the illustrations are derived from artefacts produced by or for the Achaemenid rulers or the Greeks. Yet kings and their

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116 Wiseman, 1959, no. 115.

117 In particular during the first century of their reign as after the wars with the Greeks the number of horsemen dropped (Head, 1992, p. 29).

118 Ebeling, 1952, p. 207.

119 Bittner, 1987, p. 213; Brentjes, 1996, p. 39.

120 Bittner, 1987, p. 214.

121 Head, 1992, fig. 3.

122 Haerinck, 1997, fig. 13.

123 http://classics.mit.edu/Herodotus/history.1.i.html.

124 Vos, 1963, p. 75.

soldiers are depicted with different types of bows. This combined use can be seen as propaganda, an advertisement for the bows themselves as grounds for the unification of the eclectic Achaemenid Empire. Subsequent correlations can be made as historic markers: the Elamite bow as a symbol of the realm of Susa and Anshan, the Median/Scythian bow as a symbol of victory over the dangerous horsemen from the north and the Yrzi-bow may be an invention of Iranians. The fact that the kings used all different types of bows profoundly demonstrated an example of their abilities and also for their subjects consequently unifying the rich history of the peoples that were the Achaemenids. Using the Elamite bow in Susa and the smaller Persian adaptation in Persepolis, shared with the B-shaped bows in the goryts of the Medes, was a way of public relations and of pleasing locals.

Table 6. Typological distribution of the Achaemenid types of bow[125]

Type of bow	*Soldiers (%)*	*Kings (%)*	*Number of archers*
Convex bow	13	6,5	9
Elamite bow	66	75	52
Double convex bow	13	13	10
Yrzi-bow	8	6,5	5

The bow has perceived as a symbol, a symbol for peoples but also as an indicator for kingship and sovereignty. Kings have used the bow as means of portraying their abilities and courage during combat but also as an icon for status. This is why Darius I rests his bow on his left foot which in addition tramples on Gaumata on the famous sculpture at Bisitun. The same is submissively put forward in an old-Persian text where Darius I says he is a good archer on foot and on horseback[126]. The Assyrian

[125] Using the following publications: Mecquenem, 1927, p. 18; Frankfort, 1939, pl. XXXII, XXXVII; Schmidt, 1953, pl. 23, 24, 28, 50, 56, 59, 64, 65, 83, 84, 87, 100, 101, 130, 160, 168, 173, 201; Schmidt, 1957, pl. 2, 5, 8, 10, 13; Hill, 1965, pl. XXIV-XXVII; Moorgat, 1966, taf. 90; Farkas, 1969, pl. 8; Hinz, 1969, fig. 31, 37; Boardman, 1970, pl. 904; Schmidt, 1970, pl. 22, 23, 42, 50, 51, 57, 58, 63, 71, 78; Dandamaev, 1976, taf. XIII; Hinz, 1979, fig. 9; Warry, 1980, p. 31; Roaf, 1983, pl. XLVIII; Huff, 1984, taf. 22, fig. 14-15; Bittner, 1987, taf. 2, 3, 6, 8, 9, 27; Bolweg, 1988, taf. 32; Anonymous, 1992; Kaim, 1991, taf. 7; Head, 1992, fig. 3, 12, 21, 26, 28; Sekunda, 1992, p. 3, 15, 17, 19, 26, 27, 49; Jacobs, 1994, fig. 12; Haerinck, 1997, fig. 13.

[126] Sekunda, 1988, p. 72.

kings[127] and NW-Iranian rulers[128] used the same thematic concepts and the Urartians even adorned their gods with the similar connotation[129]. This all confirms that the bow had an important role in life and culture of the first millennium B.C.

7.2 Material reconstruction

The different types of bows mentioned in the previous chapter were all of composite structure. The Yrzi-bow was made of wood (oak), horn of a gazelle and sinew of an ox or antelope[130]. Other types of wood that could be used to construct Persian bows were poplar, ash and maple[131] and the sinew were preferably taken of a deer[132]. There is also evidence of bows made of iron, copper and bronze[133]. As with the Assyrians, Urartians and NW-Iranians it is suspected these examples to have been part of ritual or religious customs.

7.3 Methods of releasing the arrow and drawing back the bowstring

Hançar[134] and Bittner[135] suppose that the Achaemenids used the tertiary technique to draw back the bowstring. Even the primary and secundary techniques, which were impossible to apply on the strong Achaemenid bows, are mentioned by Gorelik[136]. The foundation for these assumptions is unknown as no Persian, Elamite, Mede or anyone directly countable under the term Achaemenid, can be seen depicted with a clear view of the setting of the fingers while drawing back the bowstring. We only have two illustrations (Fig. 7.4-5), on Greek painted pottery, where a possible yet unclear tertiary or Mediterranean method can be spotted, but these are

[127] Many examples on orthostats and cylinder seals (Porada, 1948, pl. XCVII-XCVIII; Meuszyński, 1981, taf. 8-G8; Madhloom, 1970, pl. XXXIII, XXXVII.1-2, XXXIX; Paley, 1976, pl. 4, 19b; Collon, 1995, fig. 136d).

[128] Depiction on a golden vase from Hasanlu (Porada, 1965, fig. 60).

[129] As shown on belts, medals, bronze plates (Taşyürek, 1975, fig. 19; Merhav, 1991, pl. 47, p. 89, fig. 4, p. 167; Hâmaïakan, 1996, fig. 144, p. 158).

[130] Rausing, 1966, pp. 104-105; Bittner, 1987, pp. 148-149.

[131] McLeod, 1970, p. 31.

[132] Hinz, 1979, p. 142.

[133] Hinz, 1969, p. 89.

[134] Hançar, 1972, p. 17.

[135] Bittner, 1987, p. 148.

[136] Gorelik, 1995, pl. 1.

applied on the B-shaped Scythian or Median bow and may have been adjusted to Greek iconography. A more complicated technique was usually used by the Scythes on their B-shaped bows[137]: the Mongolian method where the thumb is hooked on the string and enclosed by the index and middle finger (Fig. 4.5). The origin of this technique is uncertain but the fact that we see it applied by the Scythes supposes a Central-Asian foundation. It is acceptable to assume that this Mongolian technique may have been used by the Medes on their B-shaped bows, in addition with the tertiary or Mediterranean way. These last two styles must have been the way to draw back the bowstring of the Elamite and Yrzi-bow, just like the Urartian recurved composite bow. To stipulate a relationship between the styles of drawing back the bowstring of different bows, we need comparable structure, material composition and outline. Both Elamite and Yrzi-bow are similar to the Urartian recurved composite bow and therefore the Urartian data can be used in this case.

7.4 Stringing of the bow

The Assyrian method to put a bowstring on the bow must have been used on the Elamite and Yrzi-bow. Another possible method, which has been used to string the B-shaped bows, can be seen in a scene on a golden vase (Fig. 7.1-2). Here the lower limb is put behind the knee and placed on the right thigh while pulling back the upper arm. This is an easy way of stringing very powerful bows. The simple bows, like the ones used by Ethiopians, could have been strung with the Egyptian method (Fig. 3.10).

8. Typological and chronological differentiation

In this last chapter we will compare the mentioned types of bows and arrange them in a chronological timeframe integrating classification (outline and composition), material reconstruction and methods of releasing the arrow and drawing back the bowstring (Fig. 8).

There is a clear connection between small bows and cavalry and larger bows and infantry (see Table 7). The most important motivation is always to maximize the power of the bow. Large bows need longer arms to do this but the cavalry requires smaller ones to keep their manoeuvrability. This is

[137] Vos, 1963, pl. XVIIb.

why the Assyrians used bows longer than 1 meter (convex and triangular: 110-125 cm), as did the Elamites (120-140 cm) and the NW-Iranians (110-120 cm). The cultures where horse riding was seen as an important aspect used smaller bows: Urartu (convex and recurved 90-100 cm), Scythes and/or Medes (75-120 cm). This divergence, in other words nomadic versus sedentary way of life, most probably finds its origin in Central-Asia and inspired the more southward living people. But more important than the size is the composition of the bows. Only people living at the periphery of the Near East used simple bows. The presence of composite bows therefore can be an indication of development, civilization, trade or communication. The notorious Assyrian army had two composite bows at their disposal: a convex and a preferred triangular bow. This last composite weapon can also be found in NW-Iran, Babylon, Egypt and Anatolia (Hittites). Its area of distribution was fairly large but it had to withstand the more powerful recurved composite bows of the Elamites, Persians and Urartians. The Yrzi-bow and B-shaped Scyth/Median bow can also be included here. An interesting aspect of weaponry is that after the introduction of the recurved bow, the Urartians still used their older convex counterparts. A possible explanation for this is that the manufacture of recurved bows was more intensive and requires a high level of craftsmanship. It was therefore a rational alternative to implement the power of the composite structure to an already known type of bow, a bow that had been used for centuries and was easier to build. Another fascinating invention was the shark fin shaped hook that could be attached to the forearm-protection. Its purpose remains unknown.

Table 7. Outline and composition of the composite bows

	Outline and composition (in cm)					
	Convex	Triangular	Recurved		B-shaped	Yrzi
NW-Iran (13^{th}-9^{th} century B.C.)	–	110-120	–		–	–
Assyria (9^{th}-7^{th} century B.C.)	110-125	110-125	–		–	–
Urartu (9^{th}-6^{th} century B.C.)	90-100	–	90-100		–	–
Achaemenids (6^{th}-4^{th} century B.C.)	–	–	90-100 (Persians)	120-140 (Elamites)	75-120 (Scythes/Medes)	90-150

Although a classification of structure is easy for composite bows (wood, horn or bone, sinew), we can not ignore the existence of metal bows. In Assyria and Urartu (offerings), as in NW-Iran (grave goods), Susa and the Achaemenid Empire, there is enough evidence that these weapons were not used during combat. Their contexts and their inflexible materials, combined with textual confirmation, link them to special functions. The (noble) metal bows in the west (Assyria and Urartu) can be connected with religion and ritual. In the east, *strictu sensu* Iran (NW-Iran and Susa) and the North (Saka), we can link them with other symbols of power, as we can do with the regular composite bows of the Assyrians and Achaemenids.

Table 8. Material reconstruction of the bow

	Type of bow	*Material*
Assyria & Babylon	Composite bows	Acacia, cedar, lemonwood and johns bread, horn from an ibex, water buffalo or gazelle and the sinew of bulls; bow-string: linen and gut and sinew
	Metal bows	Copper, gold, silver
Urartu	Metal bows	Silver, bronze
NW-Iran	Metal bows	Bronze
Achaemenids	Metal bows	Iron, copper, bronze
	Yrzi-bow	Oak, horn of the gazelle, sinew of oxen and/or antelope
	Elamite, Scythian/Median bows	Poplar, ash and maple; bowstring: sinew of deer

An evolution in the attachment of the bowstring is only distinguishable in Assyrian art. Even though the pommel-shaped knobs were used in prehistory, we can still find them in the 10^{th} century in Assyria/Babylonia and NW-Iran and in the 9-6^{th} centuries in Urartu. During the 9^{th} century the rigid ears, made of horn, bone or another material, were introduced. In Urartu they survive as undefined profiled ears and heads of animals were used in Assyria and in the Achaemenid Empire. A more important observation is that the convex bows of the Assyrians and Urartians had central spines, the composite structure, which could be fashioned by cutting the extremities, creating a groove for the attachment of the bowstring. The other bows had separate parts that could be shoved over the ears. It is also interesting to note that there was a clear distinction between the convex

composite bow of the Urartians, which had a pommel-shaped ear, and the recurved bows which had profiled ears.

Table 9. Summary of attachment of the bowstring

<table>
<tr><th>Century</th><th>Assyria/Babylon</th><th>Urartu</th><th>NW-Iran</th><th>Achaemenids</th></tr>
<tr><td>10th</td><td>Pommel-shaped</td><td></td><td rowspan="3">Pommel-shaped</td><td rowspan="4"></td></tr>
<tr><td>9th</td><td>Pommel-shaped;
eagle/falcon's head</td><td rowspan="3">Pommel-shaped;
Profiled</td></tr>
<tr><td>8th</td><td>Pommel-shaped;
duck's head</td></tr>
<tr><td>7th</td><td rowspan="2">Pommel-shaped;
duck's or lion's head</td><td rowspan="4"></td></tr>
<tr><td>6th</td><td rowspan="3"></td><td rowspan="3">Duck's head;
profiled; groove</td></tr>
<tr><td>5th</td><td rowspan="2"></td></tr>
<tr><td>4th</td></tr>
</table>

So far this typological summary has been based on shape and structure. It is crucial however to find out how powerful, in a relative way (type A is stronger/weaker than type B), the bows of the Near East actually were. The methods of releasing the arrow, drawing back the bowstring and the stringing of the bow are important aspects of archery, as they represent the tension on the arms of the bows. This is a way of dividing the more powerful bows from the weaker ones.

Table 10. Methods of releasing the arrow with composite bows

			Primary	*Tertiary*	*Mediterranean*	*Mongolian*
10-6th century	Assyria / Babylon	Convex	X			
		Triangular	X	X	X	
	NW-Iran	Triangular	X	X	X	
	Urartu	Convex	X			
		Recurved		X	X	
6-4th century	Achaemenids	Elamite/Persian		X	X	
		Yrzi		X	X	
		Scythian/Median B-shaped				X

Table 10 indicates a clear evolution from primary over tertiary and Mediterranean techniques to the most distinctive of them all, the Mongo-

lian technique with the 6^{th} century B.C. as a clear breaking-point. Consequently the convex composite bows of the Assyrians and Urartians were less powerful than the others. They were already manufactured before the 1^{st} millennium but continued to be used. The triangular bows of the Assyrians, Babylonians, NW-Iranians, Egyptians and Hittites are supposed to be stronger. The structure demands a tertiary or Mediterranean technique but most of the times the primary one can be seen. This in contrary to the recurved bows, their force is a creation of the reflex-movement of this bow. Only the tertiary or Mediterranean techniques could handle the strong tension on the bowstring. These were the most powerful bows of the 1^{st} half of the 1^{st} millennium but were no match for the Achaemenid bows. The Elamite/Persian bow is of equal strength of the recurved bows of the former generation but the Yrzi-bow and Scythian/Median bows, their composition, outline and stability, can almost be compared with the famous post-Alexandrian bows of the Sassanids, Huns and even Turks. The primary technique is never depicted after the 6^{th} century B.C. What is even more, the Mongolian method was introduced, established for the most powerful bow of the second and third quarter of the 1^{st} millennium: the B-shaped composite bow.

In conclusion a chronological evolution can be drawn. The Hittites, Egyptians, Assyrians, Babylonians and with them the NW-Iranians used a triangular composite bow during the transition from the 2nd to the 1st millennium. At the same time the Urartians and in lesser extent the Assyrians still used the older and less strong convex composite bow, a reworked copy of the 2nd millennium. The inventors of the triangular bow in the Near East, the Hittites, changed their weaponry sometime during the end of the 10th and the beginning of the 9th century. This led to the use of the recurved composite bow, in contrast to the Assyrians and Babylonians. At the same time there is an important development happening in the steppes of Central-Asia. Horse riding could only maintain its advantage of speed, mobility and manoeuvrability if an appropriate weapon was invented. Based on their experience as horsemen the peoples of the steppes manufactured a bow with strong grip and rigid ears. Its composite structure made it possible to make it smaller without losing its strength. As a consequence these men could turn their upper bodies all the way to the rear of the horse and shoot, giving an extra advantage of shooting when retreating. This way of combat and the complementary type of bow was first encountered in the Near East in the north, a result of the predatory expeditions of the Scythes. Archery on horse-

back was therefore eagerly adopted by the Urartians. So during the 9-8th century, maybe contemporary with the migration of the Iranians or imitating the Scythes, the Urartians, Hittites, Medes and Elamites learned to use archery on horseback with a new type of bow. Thus founding an era, starting in the 9th century and ending at the end of the 7th, where the majority of the peoples used the triangular composite bow, surrounded by others, sometimes isolated regions, using a stronger recurved bow. It is striking that the Assyrians, Babylonians and NW-Iranians did not use the recurved composite bow. Furthermore it is comprehendible why the Babylonians sought an ally like the Medes to combat the Assyrians. Like the Assyrians they knew of the existence of the Cimmerian bow. The Cimmerians, like the Scythes, had an impressive cavalry. Why the Assyrians preferred the triangular bow over the other ones could be seen as military conservatism. An explanation for this is that the Assyrian armies probably had nothing to gain by using another type of weapon. The combined use of other weapons, highly qualified engineers and superior tactics and politics might have been enough. As long as the Assyrians won they did not require a major change. The transformation of the army by Tiglath-pileser III is a token of this as he did not profoundly change the army in such a way that the new bows could be implemented. Yet the fall of the Assyrian Empire did not mean the end for the Akkadian bow (Assyrian/Babylonian triangular bow).

After the Medes defeated the Urartians the more powerful bow of the Scythes was ignored by the Babylonians. It is the introduction of this type of bow that meant the swan song for the Akkadian bow. And even though the Babylonians had the Cimmerians at their disposal, as mercenaries, a new conqueror was on stage. After the sack of Babylon the Persians were willing to adjust. Eclecticism became one of the main features of the dynasty of the Achaemenids. This resulted in an amalgamation in which the Elamite bow was favoured. The use of other bows, Yrzi-bow, Median/Scythian B-shaped bow etcetera, was tolerated, one of the strong points of the Achaemenid army. This general progression can be compared with Table 10. In other words, there is a clear evolution to more powerful bows and a replacement of the bows used in the 1st half of the 1st millennium. This development, in which politic and economic factors will have played an important role, needed a stabile, supporting culture and a faster evolving and exploring surrounding. The conservative nature of the Assyrians and Babylonians and the more progressive Achaemenids are as a result recognizable in the typology of their bows.

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2) McLeod, 1970, pl. XV 14 b.
3) McLeod, 1970, pl. XV 14 a.
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1) Adaptation Bittner, 1987, taf. 19.2.
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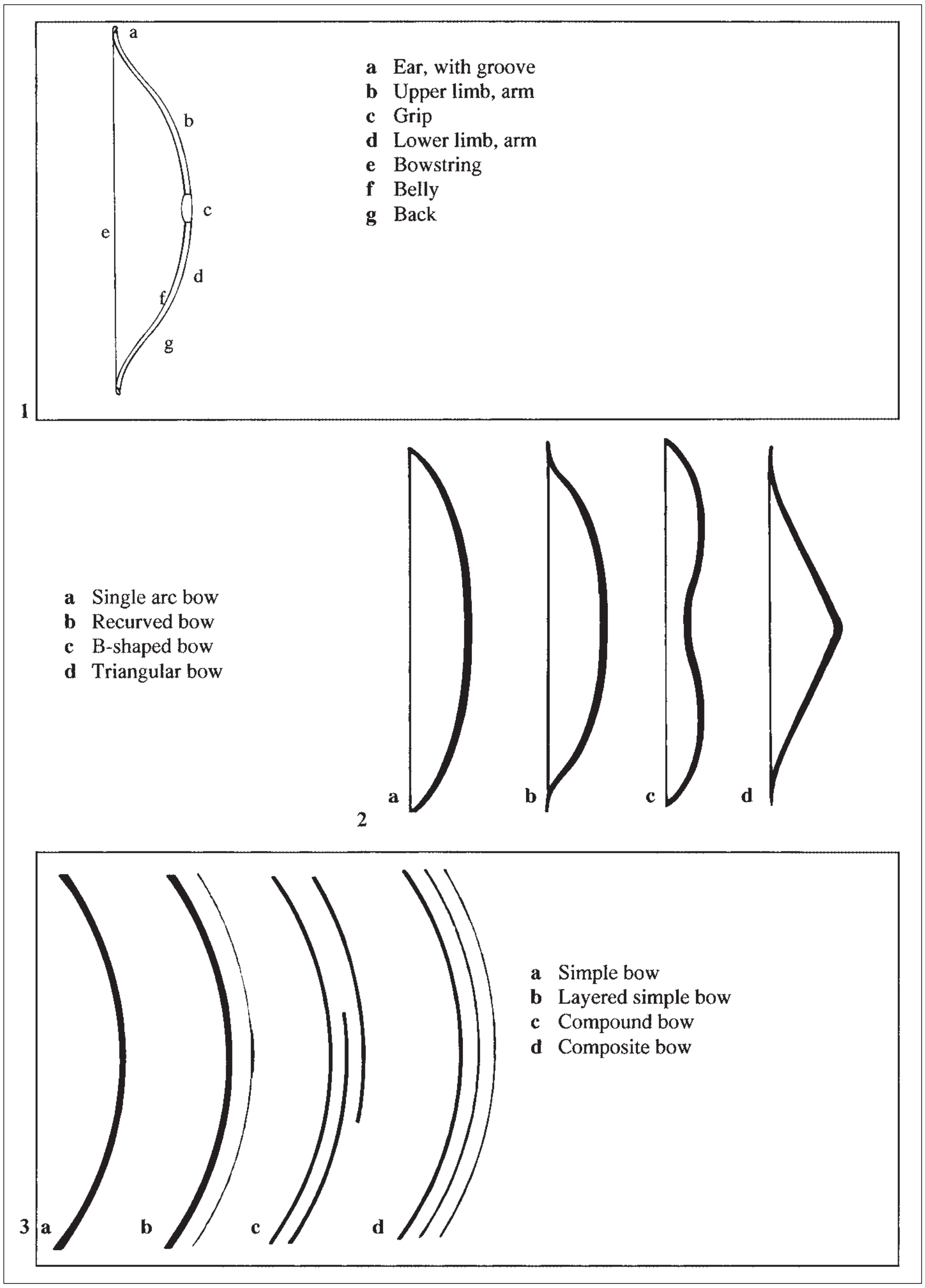

Fig. 1. The bow: (1) Parts; (2) Outline; (3) Structure.

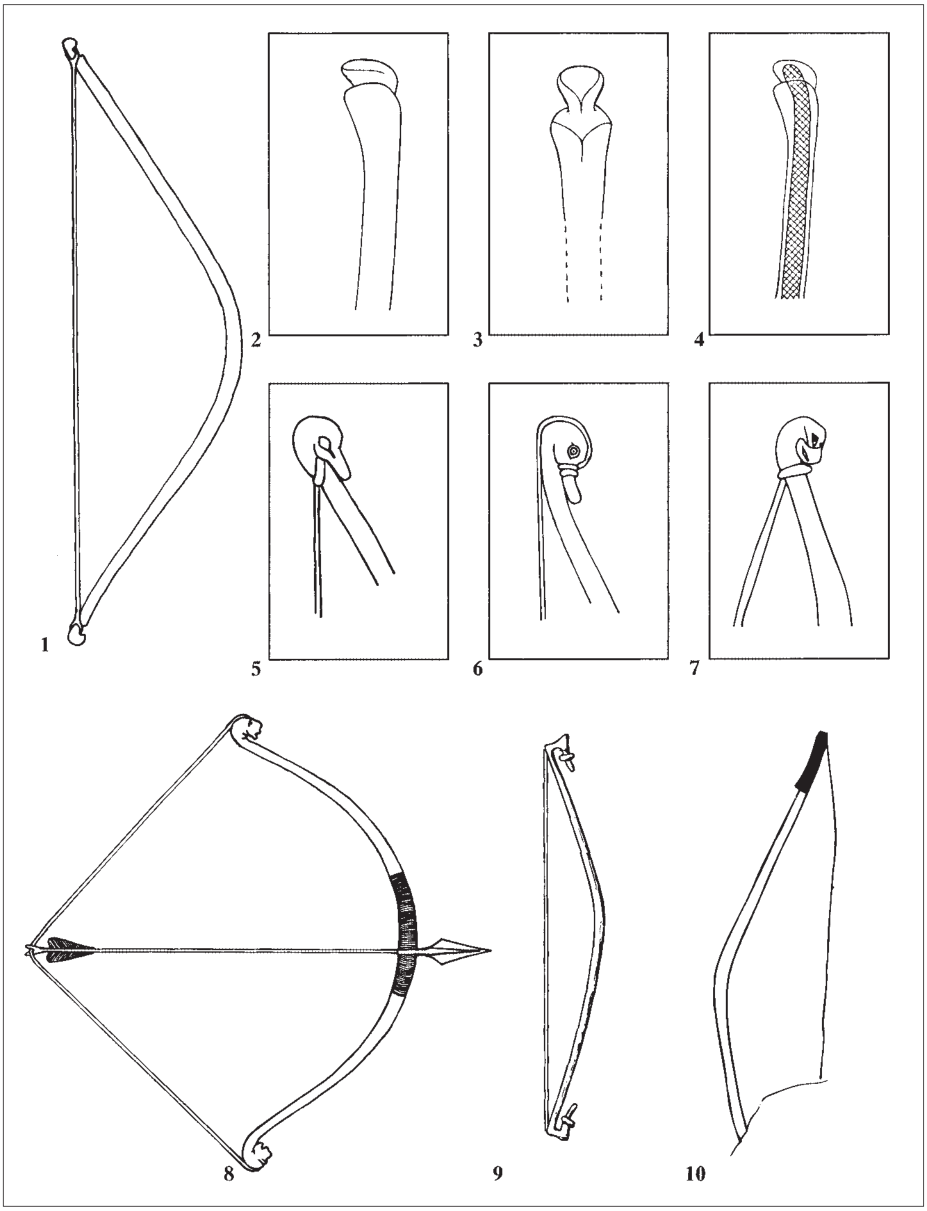

Fig. 2. The neo-Assyrian bow, outline: (1) Triangular; (2-4) Pommel-shaped ears; (5) Duck's head ears, decorative; (6) Duck's head ears, functional; (7) Eagle or falcon head, decorative; (8) Lion's head ears, functional; (9) Bow with stylised ears; (10) Bow with separate ears.

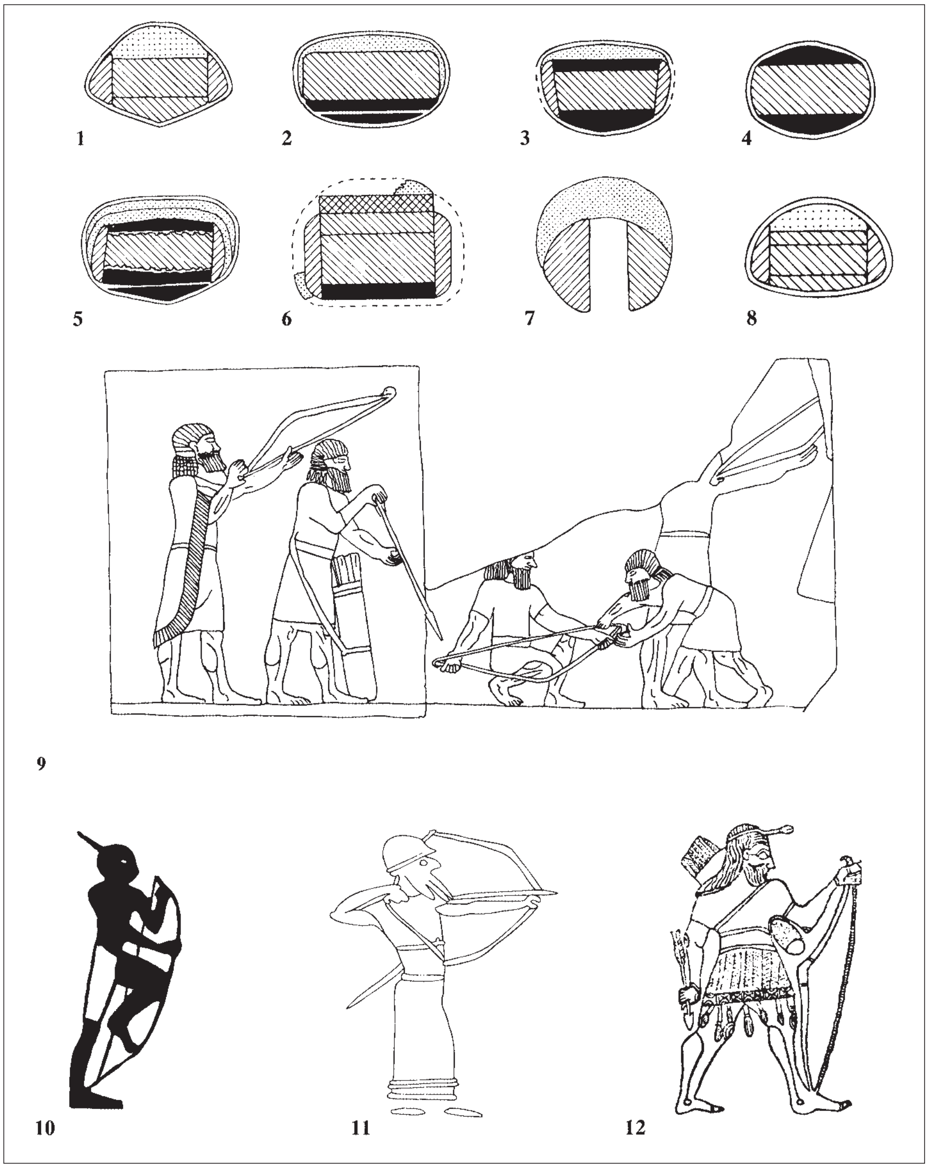

Fig. 3. The neo-Assyrian bow, structure and stringing: (1-8) Sections Egyptian composite triangular bows; (9) Ashurbanipal, stringing of the triangular bow; (10) Egyptian stringing a bow, Beni Hasan; (11) neo-Babylonian archer; (12) North-Iranian archer, Hasanlu, with triangular bow.

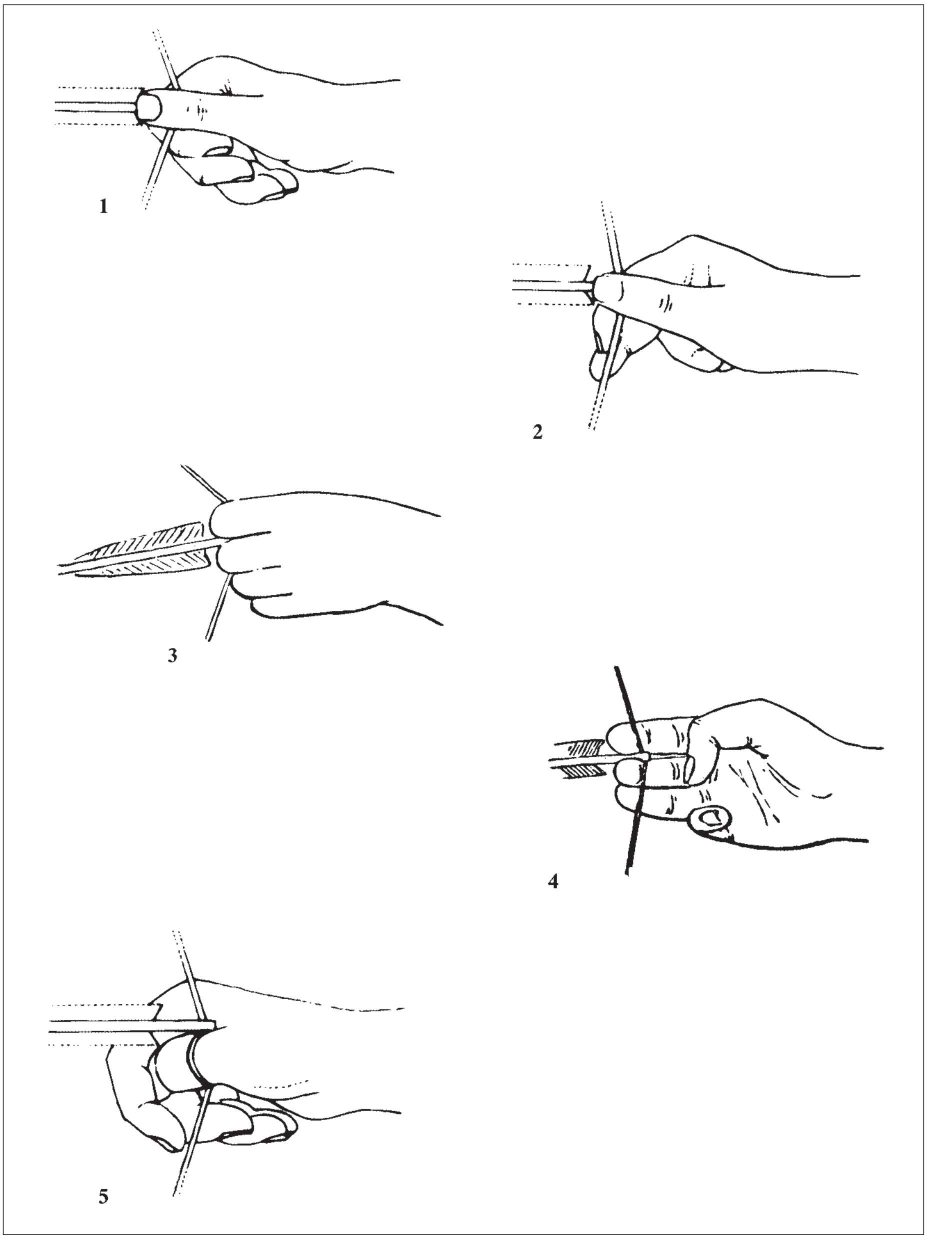

Fig. 4. Drawing methods: (1) Primary; (2) Secondary; (3) Tertiary; (4) Mediterranean; (5) Mongolian.

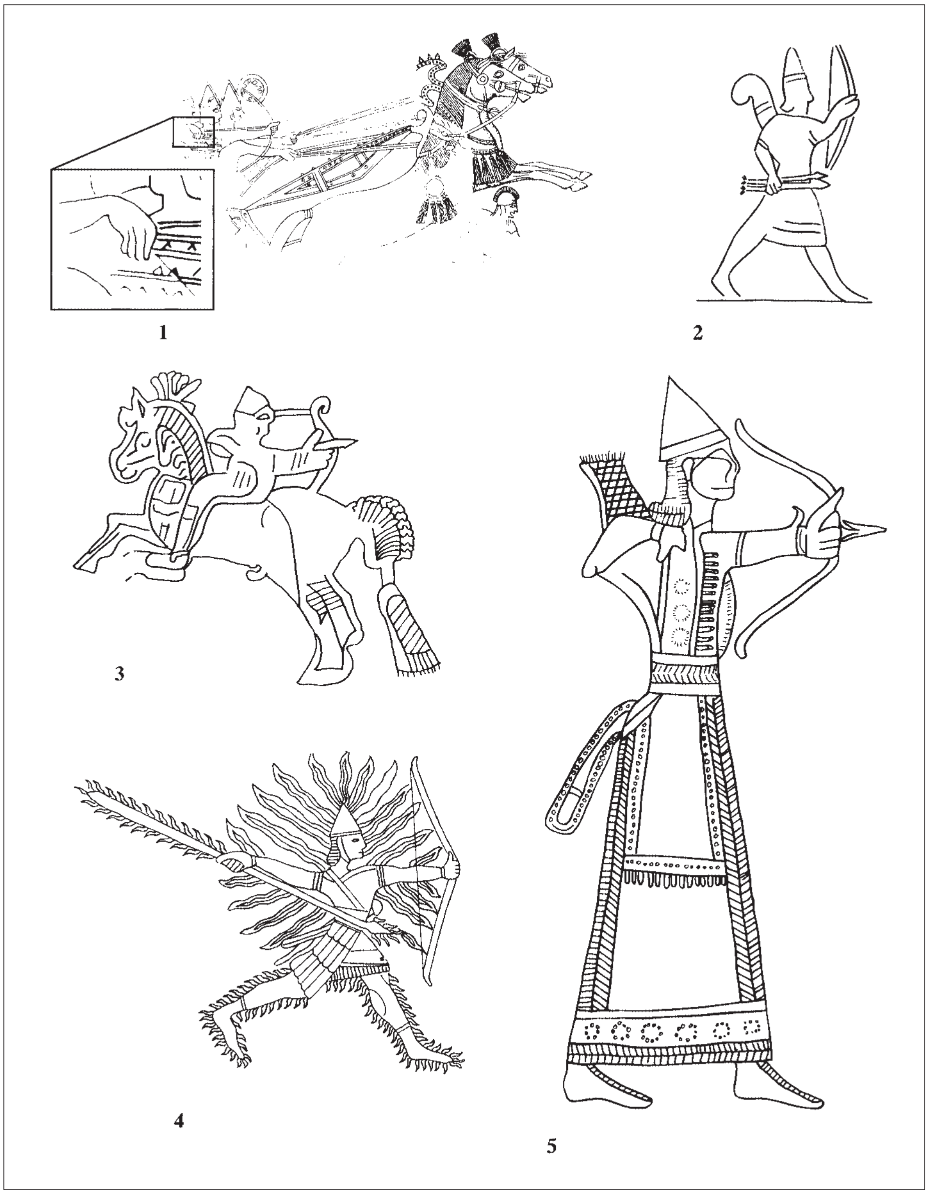

Fig. 5. The Urartian bows: (1) Finger setting; (2) Soldier with convex composite bow; (3) Parthian shot performed by Urartian; (4) Triangular bow; (5) Urartian soldier with recurved bow.

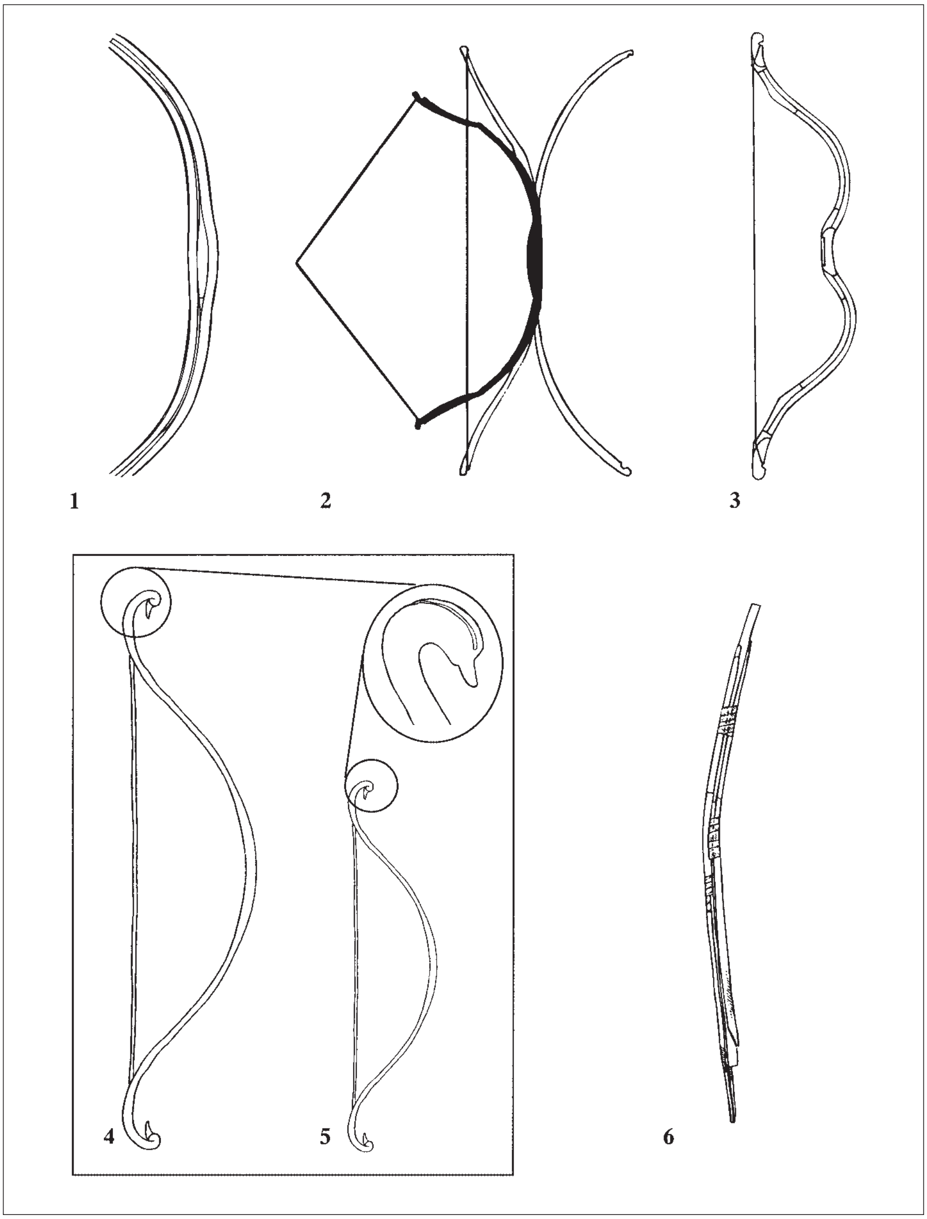

Fig. 6. The Achaemenid bows, outline and structure: (1) Reconstruction Yrzi-bow; (2) Yrzi-bow; (3) B-shaped Scythian bow; (4) Elamite bow, with detail of ear; (5) Persian derivate of Elamite bow; (6) Scythian asymmetrical bow.

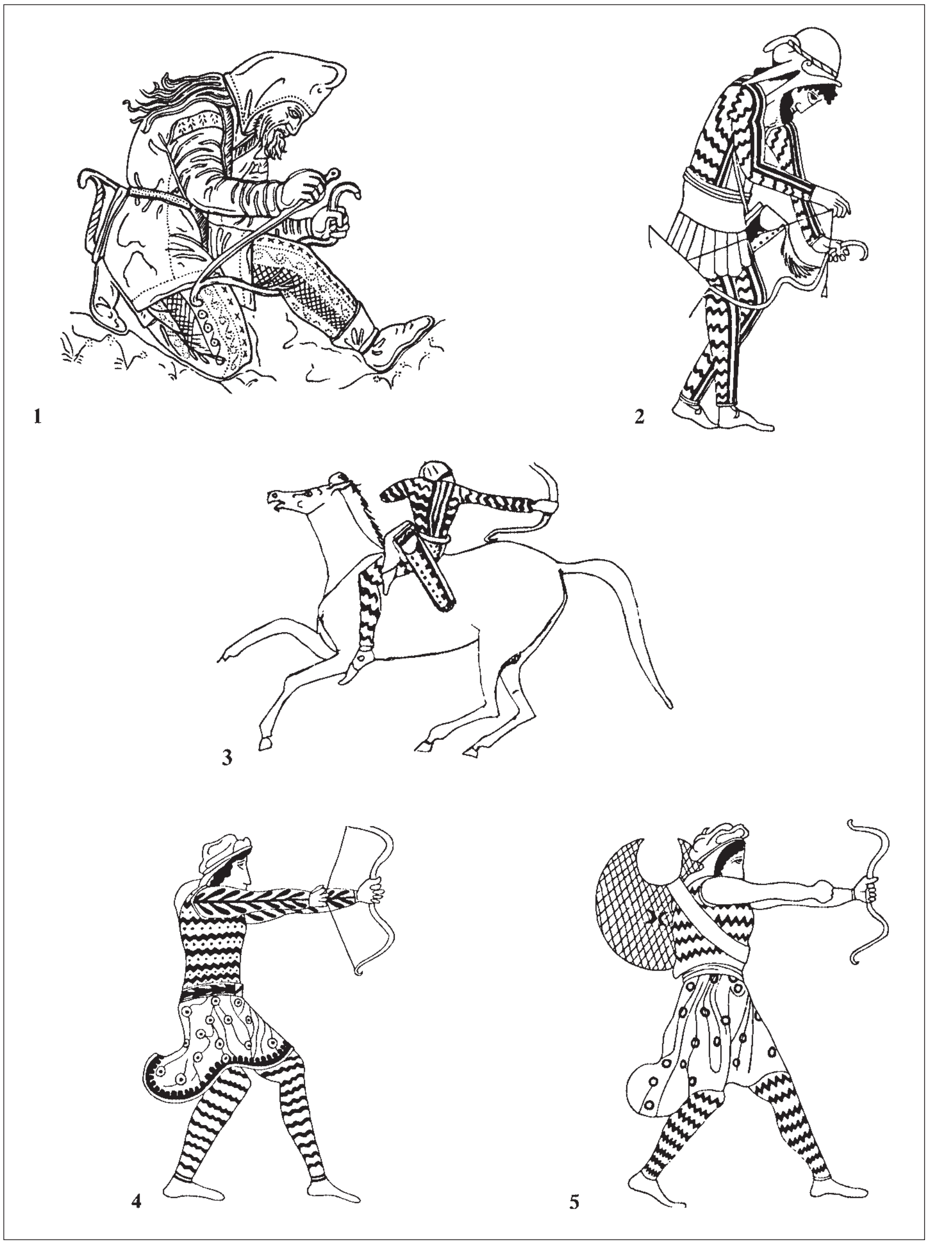

Fig. 7. The Achaemenid bows: stringing and handling: (1) Stringing by a Scyth; (2) Achaemenid on Greek pottery; (3) Horse-rider performing Parthian shot; (4-5) Achaemenids on Greek pottery.

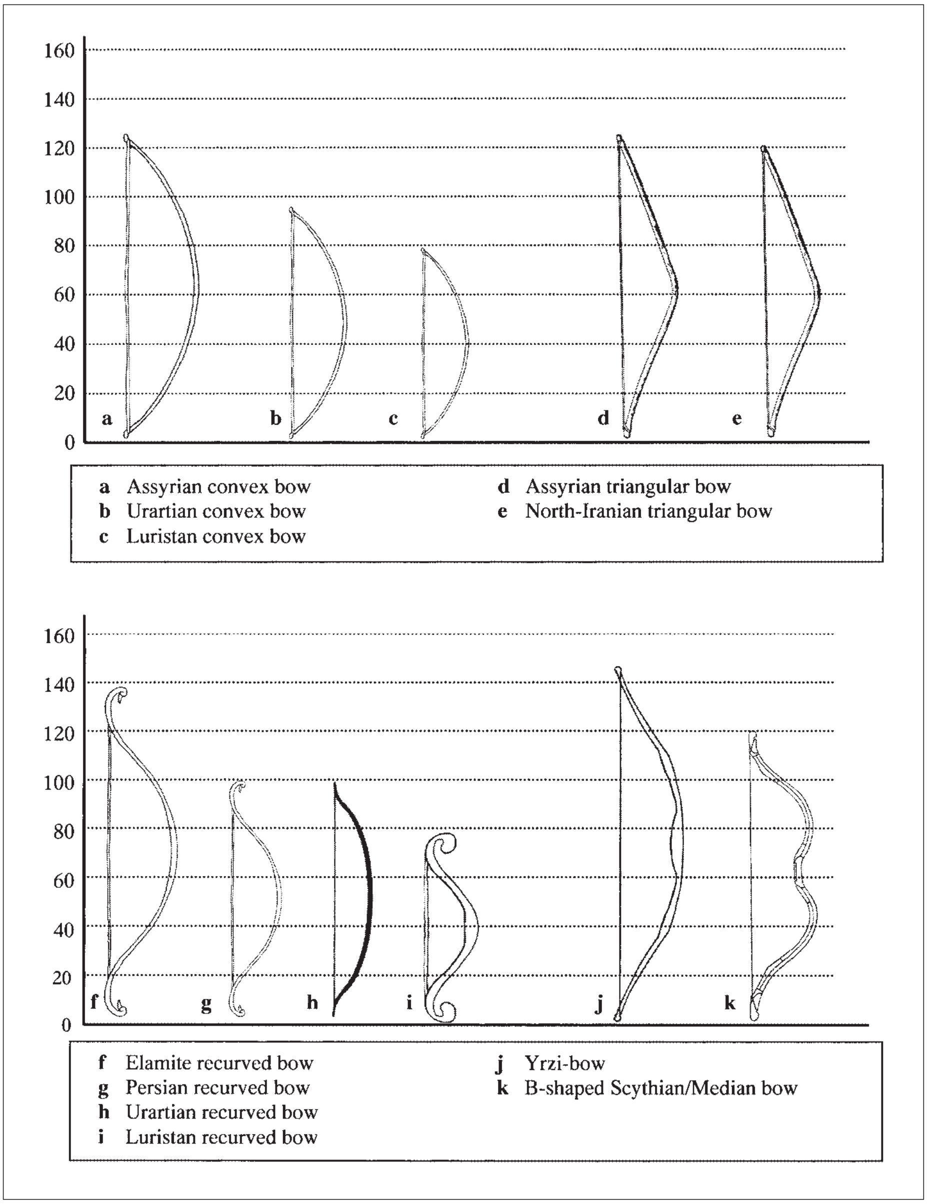

Fig. 8. Summary and typology.

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AN ASSYRIAN MOTIF IN THE *SHĀHNĀMA*

BY

Parivash JAMZADEH

In the accounts of the last *Dārā* in the *Shāhnāma* of Firdawsi relating to the wars of Darius III the Achaemenid king (336-330 B.C.) with Alexander and his flight from the Greek army, occurs the description of a scene that finds close similarities with the victory relief of Assurbanipal (668-627 B.C.) at his palace in Nineveh (Pl. 1). Furthermore, other features in this section of the Book of Kings dealing with the last hours of the last Achaemenid king also find parallels in the final destiny of the last independent Elamite king Tempt-Humban-Inshushinak (668-653 B.C.) known in Assyrian sources as Te-Umman. It is argued that the tradition of the court poets and minstrels at the service of powerful kings would have facilitated the transference of certain knowledge, while a folkloric story emanating from the common pool of the historic memories of Elamites and Persians who for centuries had peacefully co-existed in the south and west of Iran seems to have affected and modified to a certain degree and in stages, the transmission of the original strand of information.

According to the *Shāhnāma*, *Dārā* following his defeat from the forces of Alexander at a river, sends him a letter asking for clemency as well as the safe return of his family members. Alexander upon reading the letter exclaims that naturally any sacrilegious acts or even any ill intent towards the deposed king's relatives would only result in disaster for the perpetrator and so to explain his intention uses an edifying example that comes close to the description of the Assurbanipal relief.

Sekandar cho ān nāmeh barkhvānd guft-
ke bā jān-e dārā kherad bād juft
kasī kū garāyad be payvand-e ōī-
be pūshīdeh-rūyān o farzand-e ōī
nabīnad magar takhteh gūr takht-
gar avīkhteh sar az shākh-e derakht[1]

[1] *Shahnama*, Moscow, Vol. 6, 1967, p. 397

Alexander upon reading the letter said
may always wisdom be with *Dārā*.
Who-ever makes a move against his kin-
against his female relatives and his children,
shall see only a bier for a throne-
or his head hanging from a tree.

This description may be compared with Assurbanipal's victory relief at his palace in Nineveh where following his victory over Elam he is depicted as reclining on a couch in a garden under a vine in the company of his enthroned queen drinking wine and listening to the sounds of birds and the music and songs of his musicians and minstrels. The decapitated head of the Elamite king is also included, hanging from a tree[2] (Pl. 1). This scene forms the final episode of the palace decorations at Nineveh depicting the Elamite campaign which in 653 B.C. with the death of Te-Umman came to its victorious end[3]. Since this Elamite king had posed a considerable threat to Assurbanipal's might, usurping a vassal Elamite king and attacking Mesopotamia[4], his final defeat after ten years of rule would have been considered as a major victory for the Assyrian king so to justify his grandiose commemoration of the event.

The Elamite king in his last hours accompanied by his son flees from the Assyrian army, crosses the river Ulai and seeks refuge in a nearby palm-grove. But the cross-pole of his chariot breaks, Assyrian troops arrive, cut off his head, take it to Assurbanipal and throw it in front of the wheels of his chariot at the gate of Assur in Nineveh[5].

In his hour of victory the Elamite king had sent two ambassadors to Assurbanipal's court demanding the return of some 60 fugitive Elamite princes, relatives of the king he had deposed[6]. But the request had been denied by the Assyrian king[7]. At this hour and after his death these two ambassadors also appear on the scene taking the severed head to Assurbanipal[8].

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[2] H. Frankfort, *The Art and Architecture of the Ancient Orient*, Penguin Books, 1977, pp. 192-194, Fig. 217
[3] P. Amiet, *Art of the Ancient Near East*, New York, 1980, p. 251, Fig. 634
[4] W. Hinz, *The lost world of Elam*, New York, 1973, pp. 152 f.
[5] Ibid., pp. 155 f.
[6] Ibid., p. 153
[7] Ibid.
[8] Ibid., p. 156

In the story of *Dārā* as related by Firdawsi, also two of his counsellors, two priests, *'dastūrs'* play a major role in his betrayal. Judging his victory over Alexander impossible they decide to finish him off in the hope of receiving a rich reward from Alexander[9]. In the histories of Alexander, however, it is Darius' satrap of Bactria by the name of Bessus, and a member of the royal family who betrays and kills Darius and declares himself king[10]. With reference to certain details in the *Shāhnāma* one can see that Firdawsi is familiar with the Greek historians' works. But his primary source for the story of Alexander seems to be the Pahlavi translation of the δ recension of the Pseudo-Callisthenes[11]. One such detail is his reversal of what in Arrian appears as a very sentimental farewell to the dying Alexander by the line of his friends and generals[12]. In the *Shāhnāma* Firdawsi includes the same scene but has the Greek philosophers addressing Alexander's corpse with reproaches that enumerate his greed and other vices[13]. However, in the story of *Dārā* the inclusion of the two traitors seems to be rather due to a folkloric story.

Similarities between the fate of the last independent Elamite king and what is related about the last Achaemenid king in the *Shāhnāma* is probably due to the transference of the story of the Elamite king as a folkloric memory attached to and related also about the last Achaemenid king, Darius III.

The fact that both these local indigenous kings had been vanquished by powerful intruding foreign forces and both in their last hours had suffered betrayal by their close associates may have resulted in the transmission of certain features from the history of the former king finding its way in the stories told about the latter. The medium of this conveyance seems to be the popular local memory aided by patriotic nationalistic feelings. A similar formation has been seen before, also in the Alexander story in the *Shāhnāma*, where a popular memory about the site of the Achaemenid tombs at Naqsh-i Rustam had declared Alexander unworthy of the

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[9] *Shahnama*, op. cit., pp. 398 f.

[10] Arrian III, 22-30; Plutarch, *Alexander* 43

[11] T. Nöldeke, *Beiträge zur Geschichte des Alexanderromans, Denkschriften der Kaiserlichen Akademie der Wissenschaften, Philosophisch-Historische Klasse 38*, 1890, pp. 11 f.

[12] Arrian VII, 26

[13] *Shahnama*, op. cit., Vol. 7, 1968, pp. 108 f.

Achaemenids' eternal throne or their final resting place[14]. It was argued there that Firdawsi had consciously included this pacifying and patriotic story to his account of the Alexander story. Thus in harmony with Iranian nationalistic feelings he had declared the Achaemenids as the final victors in their combat[15].

Nevertheless, the description of Assurbanipal's throne scene, albeit summarized and condensed in referral, and the severed head of the Elamite king seems to originate from an Assyrian milieu repeating the message of the relief. One may perhaps note the medium of court poets and minstrels at the service of powerful kings as responsible for the transmission of this description to the Book of Kings. That a similar process seems to have been behind the occurrence of some specific scenes in the *Shāhnāma* that find precise associations in the relief programs of Persepolis, has been demonstrated before[16]. Furthermore the popularity and longevity of the minstrels ' tradition has been seen as responsible for transmitting ideas from an Achaemenid setting to Medieval European courts[17].

The Assyrian court most probably would have had its own stock of minstrels at the service of the king's propaganda. Thus ideas and programs developed at the court and presented in relief, could also be put into words and songs and sang to the glory of the king at various public and private gatherings. While this route that is the medium of court minstrels, their schooling and their tendency towards applying suitable motifs for various relevant subjects[18] may have originally been responsible for the occurrence of this description in the *Shāhnāma*, the fact that it is seen in a setting that seems to be the repeat of the Elamite king's story, would also argue for a folkloric medium conducting the information ultimately to *Shāhnāma*. Thus a folkloric story absorbing the minstrely propaganda as well as the accounts of the last

[14] P. Jamzadeh, "Remnants of the legacy of the Achaemenids in the *Shahnama* of Firdawsi", Proceedings of the second European conference of Iranian studies, eds., B. G. Wagner et al., Roma, 1995, pp. 317-323

[15] Ibid.

[16] Id., "An Achaemenid motif seen in later epic and art", *Iranica Antiqua* XXXV, 2000, pp. 47-56

[17] Id., "Royal rhetoric and minstrel poetry: transmission of formulas from Achaemenid court to Medieval European courts", *Journal of the K. R. Cama Oriental Institute*, 64, 2001 pp. 18-26.

[18] Ibid.

hours of the Elamite king would have acted as the venue for the transference of the complete story to the local memory about the last Achaemenid king.

This conclusion would not contradict the present state of knowledge about the affinity of Elamites and Persians especially prior to and following the advent of the Achaemenid empire. That the Elamite and Persian cultures had for a long period of time reciprocally affected each other, is evident from the abundant presence of Iranian words in Elamite language[19] and the Elamites' apparent inclination towards adoption of Iranian names[20].

Furthermore, the evidence of the Achaemenid reliefs at Persepolis reveals the close proximity of Elamites and Persians in many aspects and the special status that Elamites evidently enjoyed in the Achaemenid empire. Based on the reliefs, identifying the various ethnic groups comprising the Achaemenid empire, the clothing of Elamites and Persians seem virtually identical except for some minor details[21]. And in various positions the Elamites command a significantly prestigious status[22], thus proving their close kinship with their Persian overlords.

The cultural importance of certain sites to both ethnic groups, such as the area of Naqsh-i Rustam in Fars[23] may also be viewed as indicative of their close cultural affinity. Therefore in view of the existence of such overwhelming evidence, the presence of mutual patriotic memories and the juxtaposing of similar folkloric stories in the historical background of both groups may be seen as a natural outcome of centuries of shared history and culture.

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[19] I. Gershevitch, "Iranian nouns and names in Elamite garb", *Transactions of the Philological Society 1967-70*, pp. 165-200

[20] Ibid.; M. A. Dandamaev & V. G. Lukonin, *The Culture and Social Institutions of Ancient Iran,* Cambridge, 1989, pp. 293

[21] E. F. Schmidt, *Persepolis I, Sculptures. Reliefs. Inscriptions,* Chicago, 1953, pl. 21; for the tri-lingual legends above the figures of the representatives of the peoples of the Achaemenid empire, as throne-bearers on the tomb of Darius I at Naqsh-i Rustam and also tomb of Artaxerxes II at Persepolis see E. F. Schmidt, *Persepolis III, The Royal tombs and other monuments,* Chicago, 1970, p. 109

[22] Schmidt, *Persepolis I*, op. cit., pls. 21, 50, 51; P. Jamzadeh, "The Apadana stairway reliefs and the metaphor of conquest", *Iranica Antiqua XXVII*, 1992, p. 126

[23] Schmidt, *Persepolis III*, op. cit., p. 121

Pl. 1. Assurbanipal's victory relief at Nineveh showing him enthroned with the head of the defeated Elamite king hanging from a tree. From S. Lloyd, *The Archaeology of Mesopotamia*, London, 1978, fig. 155

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PERSIAN PROPAGANDA — A NEGLECTED FACTOR IN XERXES' INVASION OF GREECE AND HERODOTUS[1]

BY

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Although modern warfare is waged with a seemingly endless array of sophisticated lethal weaponry, not all weapons in the arsenal of a modern state are of the detonating variety. Psychological operations against the enemy have assumed so vital a role in the conduct of recent wars that the term psychological warfare is now in common usage. The ultimate aim of psychological warfare is to achieve military gains without the use of military force and it has been defined as "the planned use of *propaganda* and *other actions* designed to influence the opinions, emotions, attitudes and behavior of enemy, neutral and friendly foreign groups in such a way as to support the accomplishment of national aims and objectives."[2] While contemporary treatments of the subject acknowledge the importance of "other actions" such as economic pressure, military threats, duplicitous diplomacy and the like, they all stress the importance of propaganda, now easily and instantly disseminated globally in stereophonic sound complete with pictures in living color.

Although the terms psychological warfare and propaganda are relatively new, the concepts are very old indeed. Both have a lengthy history in the ancient Near East where they were practiced for thousands of years before the Persians arrived on the scene. Some of their predecessors, as for example the Assyrians, advanced the use of propaganda and psychological warfare to an art form[3] and there is every reason to believe that the Persians took

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[1] I would like to dedicate this article to the memories of two dear friends, Chester G. and Gretchen Starr. I would also like to thank my colleague John K. Evans for reading an earlier draft. Citations in parenthesis without attribution are to book and chapter of Herodotus. Translations are from the Loeb Classical Library edition of A.D. Godley, unless they are my own.

[2] Daugherty & Janowitz, 1958, 2; see also Linebarger, 1954, 37-47.

[3] On the antiquity of psychological warfare and propaganda see Laswell, 1958, 2l-24, and Finklestein, 1979, 50-100. On the Assyrian use of propaganda and psychological warfare see Oppenheim, 1979, 110-144 and Saggs, 1984, 248-250.

up right where the Assyrians left off. The propagandistic nature of such Persian documents as the Cyrus cylinder and the Behistun inscription has long been recognized[4], and studies of such texts as well as Persian Imperial art and coinage have revealed general themes of the messages kings sought to convey. These studies leave no doubt that the Persians were absolute masters at creating and disseminating propaganda in both words and pictures[5].

This important information about the Persians is all the more significant because, unlike most of what we know about them, it is derived exclusively from oriental sources, but for some reason this has not much interested students of either the Persian Wars or Herodotus[6]. Individual acts such as the route taken by Xerxes through Anatolia, the unoccupied chariot of Zeus drawn by eight white horses that accompanied his entourage (7.40), his visit to Troy and sacrifice to Athena there and his claim to be descended from Perseus (7.150) have all been labeled propaganda ploys[7], but each has been viewed in isolation with no attempt to examine the larger picture[8].

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[4] On the Cyrus cylinder see Olmstead, 1948, 51-56; von Soden, 1983, 61-81; Briant, 1996, 51-55. On the Behistun Inscription see Olmstead, 1948, 107-118; Briant, 1996, 135-140; Dandamaev, 1976, 85-90 and most recently Sancisi-Weerdenburg, 1993, 145-163 and 1999, 91-112; the earlier literature is cited by Rollinger, 1998, 155-176.

[5] On art, Root, 1979, is a seminal and magisterial study; see also Nylander, 1979, 345-359; Jamzadeh, 1992, 125-147 and 1993, 137-140 and Boardman, 2000, 140-149. On coinage see Carradice, 1987, 73-108; Root, 1989, 33-50 and Stronach, 1989, 255-279.

[6] Three recent works illustrate this point. In the index of Briant, 1996, there are 42 entries under the word "propagande." Only one of these is found in the chapter on Xerxes (p.584) and that occurs in the context of his death and the accession of Artaxerxes I. In the index of Green, 1996, there are 24 entries under the word propaganda, most of these are either generic or refer to Athenian, Spartan or Greek propaganda generally, though a few do pertain to Persian propaganda. Balcer, 1995, has no index, but by my count the words propaganda/propagandistic are used about a dozen times (pp. 43, 52, 75, 109, 111, 119, 175 n. 6, 273 and four times on p. 291), but not at all in the context under discussion here. None of the many articles in the volumes on propaganda in the ancient world edited by Sordi, 1974, 1975, 1976, even considers the Persians. Huber, 1968, 317-325 argues that Herodotus could recognize propaganda when he encountered it but his concern is with Greek, not Persian propaganda.

[7] On the route through Anatolia see Müller, 1994, 17-38; on the chariot of Zeus see Kienast, 1996, 285-313; on Troy and the Athena Temple see Georges, 1994, 59-62. On Xerxes' descent from Perseus see Georges, 1994, 66-71 and Green, 1996, 68. Tuplin, 1991, 242-255 has argued that Darius' Suez canal was built primarily for propagandistic purposes.

[8] Georges, 1994, 72-74 does proclaim that the Persian image of invincibility evident in Herodotus and Aeschylus was fostered by Persian propaganda and elsewhere (116) maintains that Persian preparations "were as much psychological as material," but offers little in the way of specific example. Green, 1996, 53, believes that "Psychological warfare — primitive, but nonetheless effective — was a Persian specialty." But he too offers little in the way of concrete example.

It is no exaggeration to say, however, that if ever in the history of Greek-Persian relations there was a moment for the Persians to utilize all of their accomplished skills as propagandists and able practitioners of psychological warfare, the months leading up to Xerxes' invasion of Europe in 480 B.C. was that moment. If one reads Herodotus with this in mind, there is plenty of information in his work to demonstrate that this is precisely what the Persians did. Two reports are of seminal importance. In the first we are told that in 483 B.C., when Themistocles sought to induce his fellow Athenians to begin construction of a navy, he did not appeal to their fear of the Persians, but to the unresolved differences between Athens and Aegina[9]. Clearly, there could have been no great fear of the Persians rampant at Athens at that time. In the second report we learn that just two years later, in the fall of 481 B.C., fear of Persia was so intense that the Athenians and Aeginetans, as well as other Greek states, agreed to forego their differences so that they might cooperate against the Persians (7.172).

Both this dramatic reversal of concern about the Persians and the realization that the Athenians were disinterested in their eastern neighbor as late as 483 B.C. merit far greater attention than either has received. The latter proposition, particularly, has been virtually disregarded by students of both the Persian Wars and Athenian history. It is, rather, an underlying assumption of their works that the Greeks, and especially the Athenians, were terrified of the Persians, if not from the instant that the two peoples initially came into contact with one another, then certainly from the Ionian revolt onward. Facts and presumed facts are interpreted in light of this assumption while a substantial body of evidence to the contrary is ignored. But a dispassionate examination of this evidence will show that the assumption is erroneous and must be jettisoned; there is, in fact, little reason to believe that the Greeks stood in awe of Persian power anytime before the late summer or fall of 481 B.C. Since this is such a radical departure from the views expressed in the existing literature, it will be necessary to undertake a wholesale reassessment of Greek-Persian relations prior to 481 B.C. and a reexamination of Athenian domestic politics in the years after Marathon.

[9] Herodotus 7.144. In describing the same incident Plutarch, *Themistocles,* 4.2 remarks that the Persians "were too far away and inspired no very serious fear of their coming," but it is not likely that he had any better evidence than Herodotus. The same is true of Thucydides, who at 1.14.3 rationalizes that the Athenians were at war with the Aeginetans but also expecting the barbarians when they built their fleet; see also the discussion of Wallinga, 1993, 158-161.

Only then will we be able to appreciate fully just how precipitously Greek fear of an impending Persian invasion of overwhelming force came into existence and only then will we be able to comprehend properly the role that Persian propaganda played in generating this fear.

Although Herodotus (6.112) assures us that prior to the battle of Marathon the very sight of the Medes threw fear and panic into the Greeks, the facts he presents do not support this contention. The evidence suggests, rather, that early on in the relations between the two peoples the mainland Greeks knew very little about the Persians and their empire[10] and had, consequently, little reason to fear them. If we can believe Herodotus, the Spartans readily entered into an alliance with Croesus as he was about to go to war with Cyrus. Although Croesus' forces were overwhelmed before the Spartans could provide any assistance, they showed no hesitation in joining an alliance against the king (1.69-70). A short time later the Ionian and Aeolian Greeks appealed to the Spartans for assistance against Cyrus (1.141). The Spartans refused the request, but, if we can believe Herodotus, they did send envoys to Sardis threatening to punish Cyrus if he should harm any Greek city (1.152). While reports of these early contacts may be suspect, even as we get down to the time of the Ionian revolt, the Spartans seem totally unimpressed by Persian power. When Aristagoras came to Sparta seeking assistance against Darius, the Spartans rejected his plea, but it is important to note that they did so not because of any great fear of the Persians but, according to Herodotus, because of the vast distance separating Ionia from the Persian heartland[11]. If the Spartans only now learned that the journey from Sardis to Susa required three months, it would be necessary to conclude that as late as 500 B.C. they knew very little about the size and might of the Persian kingdom.

Although the Peisistratid takeover of Sigeum in the Troad (5.94) put the Athenians in a better position than the normally xenophobic Spartans to

[10] Grundy, 1901, 534-535 rightly recognizes that even as late as 480 B.C. the Greeks and Persians really knew little about the other militarily. Georges, 1994, 115 asserts that in 480 the Greeks defeated a people "who were almost strangers to them..." This would seem to be borne out by the archaeological evidence, or the absence thereof; see Miller, 1997, 29, who notes that there are no Persian objects in Greece earlier than the time of the invasions of 490 and 480 B.C. On pp. 63-88 she surveys Athenian objects found in the east and concludes that the quantity does begin to increase in the closing decades of the sixth century B.C.

[11] Herodotus 5.49-54 discusses these events.

acquire knowledge about the Persians, they too seem to have been ignorant of the empire and showed the king no great respect. In 507 B.C., fearing war with Sparta and her allies, the Athenians dispatched ambassadors to Sardis seeking an alliance with the king. The Persians were willing, but demanded earth and water in return. The envoys complied, but on their return to Athens they were "greatly blamed for what they had done" (5.73). While there is no indication that the Athenians formally renounced the agreement, they certainly never behaved as though they were subjects who had entered into a sacred relationship with the king of Persia[12]. In any case, Herodotus seems to imply that the Athenians did not expect to be required to grant earth and water in return for an alliance and were caught off guard when it was demanded. This is further indication of just how little they really knew about their eastern neighbor. A few years later, when ordered by the Persians to return Hippias to power, the Athenians not only refused, but rashly declared war on the king as well (5.96). At the outbreak of the Ionian revolt Aristagoras, unable to secure assistance at Sparta (5.49-51), made his way to Athens. There, according to Herodotus (5.97), he spoke of the great wealth of the empire and opined that the lightly armed Persians could easily be overcome on the field of battle. Whether he used these arguments or others, the Athenians were easily won over and showed no fear of the Persians when, disregarding their pledge of earth and water, they readily voted to dispatch 20 ships to Asia (5.97). Nor did the Eretrians show any concern for Persian power when they decided to honor an old debt to the Milesians by sending five ships to their assistance[13]. Both decisions were made with the knowledge that the Persians had recently been humiliated when their attempt to subdue tiny Naxos

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[12] This incident continues to be ignored, as for example by Young, 1988, 66-7l. On the earlier literature see Orlin, 1976, 255-266 who argues that in promising earth and water the Athenians had entered into a sacred relationship with the king, which they subsequently broke by assisting the Ionians. The same arguments and the meaning of earth and water are set out by Kuhrt, 1988, 86-99. Badian, 1994, 107-130, especially 125-126 suggests that it was Alexander I of Macedon who gave the Athenians the idea of appealing to the Persians in the first place.

[13] Herodotus 5.99. Bosworth, 1994, 15-27 has argued on the basis of a fragment of Heracleides of Pontus' dialogue *On Pleasure,* preserved in Athenaeus (536f-537c), that part of the Persian fleet sent against Naxos in 499 B.C. sailed to Euboea, where it encountered "unexpectedly strong opposition and [sustained] heavy Persian casualties." (25). This would, he argues, help explain why Eretria agreed to assist the Ionians in their revolt. I do not find his argument convincing, but if he is correct, then the Greeks had additional evidence that the Persians were not invincible.

ended in failure (5.30-34), and this was undoubtedly the most pertinent information then available.

There is, in short, nothing to indicate that prior to the outbreak of the Ionian revolt the mainland Greeks stood in awe of Persian power, and, by extension, that they were even vaguely familiar with the central tenets of Persian imperial propaganda. That propaganda stressed, among other things, the exalted position of the king and his close association with the gods. The primacy of the monarch is immediately apparent from the many grandiose and ostentatious titles borne by him. In the Cyrus cylinder alone we find the following titles: "king of the world, great king, legitimate king, king of Babylon, king of Sumer and Akkad, king of the four rims (of the earth)." In the very first line of the Behistun Inscription Darius calls himself "great king, king of kings, king in Persia, king of countries" (DB I.1-2) and elsewhere we find "king of countries containing all kinds of men, king in this great earth far and wide" (DNa)."[14] Such titles paint a graphic picture of a monarch who is much larger than life and that is how he is depicted in Persian imperial art. An equally important theme in imperial propaganda is the inseparable connection between the king and the gods, especially but not exclusively Ahuru Mazda. Thus, in the Old Persian version of the Behistun inscription the name of Ahuru Mazda is invoked sixty-nine times, and only slightly fewer, sixty-one times, in the Akkadian version[15]. It is this god who is credited with everything from the mundane task of assisting Darius in crossing the swollen Tigris River (DB I 87-90) to bestowing the kingship on him and granting him rule over all of Asia. There is no distinction between the fortunes of Ahuru Mazda and the fortunes of Darius himself and opposition to the king is tantamount to opposition to the gods, for Darius, and other Persian monarchs, claim to have the support not only of Ahura Mazda, but of other gods as well (DB IV 59-61)[16]. If the Greeks were even

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[14] On the Cyrus cylinder see Pritchard, 1950, 316; for the other titles I have relied on Kent, 1953; see also Badian, 1994, 110.

[15] These figures are derived from the English translation of the Old Persian text by Kent, 1953, and the English translation of the Akkadian version by von Voigtlander, 1978; on the importance of religion to Persian monarchs see Ahn, 1992.

[16] In the Cyrus cylinder, Cyrus attributes his victory over Nabonidus to the favor of Marduk, the chief god of Babylon for centuries; on this and on his praise of Sin Nannar at Ur see Kuhrt, 1983, 83-97. In the Old Testament (*2 Chronicles,* 36.22; *Ezra,* 1.1-2; *Isaiah,* 44-28-45.1-4) Cyrus' rule is attributed to the favor of the God of the Hebrews. In Egypt, Cambyses, (Posener, 1936, 36 # 4) and Xerxes (Posener, 1936, 124 # 30) were each hailed as the son of Ra, while Darius is specifically said to have been placed on the throne by Ra (Posener, 1936, 59 #8).

vaguely familiar with this imperial propaganda which depicted an all powerful king who received his authority to rule over the whole world directly from the gods and who enjoyed the favor of the gods in his every undertaking, it is not discernable from their actions. The evidence indicates, rather, that they lacked information about the size, wealth and might of the Persian Empire. Indeed, nescience would seem to be the only explanation for such foolhardy acts as Sparta's threat to punish Cyrus if he should harm any Greek city, if such a warning was actually delivered, and Athens' declaration of war against the king.

Such ignorance of the Persians, who even before the Ionian revolt had demonstrated their ability to move an army into Europe against the Scythians[17] and had established their presence in Thrace and very possibly in Macedonia as well[18], is difficult to comprehend, but there is a body of evidence which, cumulatively, reinforces this conclusion. First is the report of Herodotus (8.132) that in the spring of 479 B.C., after Xerxes had been defeated at Salamis, envoys arrived in Greece from Ionia and implored the Greeks to sail to that region. The Greeks did sail as far as Delos, but since they had no knowledge of anything beyond that island, fear of the unknown prevented them from sailing farther. At Delos, according to Herodotus (8.132), "they supposed that Samos was no nearer to them than the Pillars of Heracles." There is undoubtedly some exaggeration here, but before dismissing the report completely, as do How and Wells in their commentary, it would be well to recall Thucydides' assertion (6.l.1) that in 4l5 B.C. many Athenians were ignorant of the size and population of Sicily. It has been shown, moreover, that Aeschylus' knowledge of Persian names, beyond those of royalty, was limited and superficial[19] and even Herodotus, a native of Asia Minor who had traveled through parts of the empire[20],

[17] Herodotus 4.118-142 on the Scythian campaign and see Georges, 1987, 97-147 and Fol & Hammond, 1988, 234-243.

[18] It is not entirely clear when Macedonia became a vassal kingdom of the Persians. Hammond, 1989, 44 believes the Macedonians submitted about 510 B.C. Errington, 1990, 10 and Borza, 1990, 100-104 favor 492 B.C. on the basis of Herodotus 6.44. Badian, 1994, 107-130, argues that the Macedonians initially submitted to Persian control about 513 B.C., broke away during the Ionian revolt, and were brought back into the fold by Mardonius in 492 B.C.

[19] Schmitt, 1978.

[20] Herodotus himself frequently speaks of places and things he has personally seen (for example, 2.44; 2.99; 2.150; 3.12) but this has frequently been questioned, most persistently by Armayor, 1978, 45-62, 1980, 59-71 and 1980a, 51-74, who maintains that

while remarkably well informed on some things seems poorly informed on others[21].

Athenian and Eretrian participation in the Ionian revolt marks the first occasion of a face to face hostile encounter between the Persians and the Greeks of the mainland. The experience was limited in time and the number of men involved. If each ship carried a crew of roughly 200 men then no more than 4000 Athenians and 1000 Eretrians took part in the expedition, and these could not have been in Asia any longer than a few months at most. On their arrival, the mainlanders joined with the Ionians and marched on the satrapal capital at Sardis, where the Persian garrison was caught by surprise. The city, except for the heavily defended acropolis, was easily taken (5.l00) and either intentionally or accidently set ablaze. As the fire raged, the Persians regained their composure and prepared to make a stand. When the Greeks learned that reinforcements were on the way, they withdrew "out of fear" (5.l0l). Before they could reach the safety of their ships near Ephesus, they were overtaken by the Persians and thoroughly routed in the battle that followed (5.l02). This marks the end of Athenian and Eretrian participation in the revolt (5.l03). Herodotus gives no reasons for their decision to withdraw from the fray and return home, but the Persian victory in the land battle, where the Eretrian commander was killed in the fighting (5.102), must surely have influenced that decision[22].

What are we to make of this limited contact between the Greeks of the mainland and the Persians during the Ionian Revolt? Some of the most egregious ignorance of the Greeks may have been allayed, but in the end the experience can only have offered a mixed message. True, the Persians were ultimately victorious and the revolt was suppressed, but even without

Herodotus was not widely traveled. Rollinger, 1993, 167-187, after careful analysis of Herodotus and the physical remains, does not believe that Herodotus ever got to Babylon.

[21] Lewis, 1985, 101-117 provides a good overview. As indicated in the previous note, Herodotus' knowledge of Babylon, once thought secure, has recently been called into question by Rollinger, 1993, in a provocative treatment of the subject. de Jong, 1997, 76-120 after a thorough examination of Herodotus 1.131-132, a passage generally acknowledged as a description of contemporary Persian religion, concludes that Herodotus knowledge of the subject was really quite meager. Vogelsang, 1992, 210 remarks that Herodotus knew little about eastern Iran and the eastern portion of the empire generally, for which he should be forgiven; see also Tuplin, 1996, 136-138.

[22] On the Ionian revolt see Tozzi, 1978, Wallinga, 1984, 40l-437 and Murray, 1988, 461-490, whose views have recently been challenged by Georges, 2000, 1-39.

assistance from their mainland brethren, the Ionian Greeks did manage to withstand Persian power for five years (6.19-20). It would be easy to conclude that the Persian Empire was hardly the most powerful kingdom on earth, but as noted above, it is commonly assumed that from this point onward the Athenians, particularly, were utterly terrified of the Persians. This assumption seems to rest, consciously or unconsciously, on no more secure foundation than an anecdote related by Herodotus (5.105). This anecdote has Darius, on learning that Sardis had been burnt by the Athenians and Ionians, praying to god that he be granted vengeance on the Athenians and charging a servant with repeating three times every day at dinner the exhortation "Master, Remember the Athenians." As historical evidence this far-fetched tale is worthless, and so too, it now appears, is the only bit of evidence ever adduced to support the contention that the Athenians were terrified of the Persians in the aftermath of the Ionian revolt: their reaction to Phrynichus' play, *The Fall of Miletus*, which is usually assigned to the year 493 B.C. According to Herodotus, the Athenians fined Phrynichus 1000 drachmae and forbid the further staging of the play "for bringing to mind a calamity that touched them so nearly" (6.21). This would indeed imply that there was deep concern over the fate of Miletus and its inhabitants and perhaps genuine fear of Persia's next move. But a careful reading of the text has enabled Badian to argue convincingly that the calamity the Athenians had in mind was not the destruction of Miletus at all but the destruction of Athens[23]. The play, in other words, must have been staged shortly after the sack of Athens in 480 and again in 479 B.C. Consequently, it tells us nothing about Athenian attitudes in 493 B.C. and, as their subsequent behavior also suggests, there is no evidence to indicate that the Athenians or the Eretrians were thrown into paroxysms of fear of the Persians as a result of their experiences in Ionia.

We do not know when the Athenians and Eretrians first learned that Darius was determined to punish them for their participation in the revolt,

[23] Badian, 1996a, 55-60. Georges, 1994, 7l-72 accepts the traditional dating of 493 B.C. and offers a good example of the way in which the incident has been generally interpreted."Dread of the Persians in the aftermath of the burning of Ionia had cost the tragedian Phrynichus a silver mina for reminding the Athenians of their *oikkeia kaka* (Hdt. 6.21.2), "their own troubles," by staging a bathetic *Fall of Miletus* for an audience who knew they were the Persian's next target." Similar statements can be found at random in the literature.

but we hear of no attempt to coordinate their defensive efforts as Mardonius advanced on Greece in 492 B.C[24]. Moreover, if as Herodotus believed, Darius' intent was to subdue as much of Greece as possible (6.44), then Mardonius' campaign posed a potential threat to all mainland Greek states, but the record is also silent on any concern these states might have had. The Thasians were cowed into submission and gave up without a fight and Persian control over Macedonia was either established or reaffirmed, but the Thracian Byrgi resisted. They were eventually subdued, but not before many Persians were killed in the fighting and Mardonius himself was wounded (6.45). These losses coupled with the loss of men and ships in a storm off Mt. Athos (6.44) induced Mardonius to call off the invasion and return to Asia. This is a decision he must have dreaded making, for it would surely incur the displeasure of the king. Even if Mardonius could claim limited success in bringing Thasos, Macedonia and the Byrgi under Persian control, his decision to call off the invasion was tantamount to a public admission that, for the moment at least, the Persians were incapable of accomplishing their stated objective of punishing Athens and Eretria for their role in the Ionian revolt. This could only build Greek confidence and further dispel fear, especially as Mardonius' failure was underlined when he was relieved of his command on his return to Asia[25].

Soon after this aborted invasion Darius began preparations for another campaign against the Greeks and dispatched heralds to Greece demanding earth and water (6.48-49). Herodotus assures us that "many of the dwellers of the mainland and all the islanders to whom they [the heralds] came with the demand" gave earth and water (6.49). Although this sweeping general statement has often been taken literally[26], it is clearly

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[24] Herodotus 6.44-45 and see Zahrnt, 1992, 237-279.

[25] Herodotus 6.94. It is difficult to know what to make of Herodotus 6.46, where he says that in 491 B.C. Darius ordered the Thasians to destroy their walls and bring their ships to Abdera because it was reported that they were planning rebellion. Herodotus says flatly that the accusation was false and it may have been, but a Thasian rebellion in the aftermath of Mardonius' failure certainly seems possible.

[26] Balcer, 1995, 205-206 offers a good example: "The Greek response to surrender was overwhelming. From all the Aegean islands the heralds visited, they received their demands; from many mainland poleis also….very few Greek poleis resisted." Darius then planned to attack "the few mainland Greek poleis still at war with him." The words of Hammond, 1988, 496, Grote, 1899, 4, 315, and Green, 1996, 29 are equally sweeping. Conversely, Hignett, 1963, 87 doubts that envoys were even sent to Greece in 491 B.C.

an exaggeration, for as we shall see, Herodotus himself provides sufficient information to undermine its accuracy. We need to note first, however, how Darius' heralds were received at Athens and Sparta. In Athens they were thrown into the Barathron, that area behind the Acropolis where condemned criminals were routinely consigned (7.133), while at Sparta they were cast into a well (7.133-135). Given the traditional inviolability of heralds in antiquity[27], these were deliberately provocative, heinous, even sacrilegious acts, and were certain to be viewed as such by the Persians. Since neither the Athenians nor Spartans were the least bit reluctant to antagonize intentionally the most powerful monarch on earth, we can only conclude that they were not overcome by fear on this occasion.

Although, as just noted, Herodotus says that all of the islands visited by Darius' heralds gave earth and water, he mentions only Aegina by name (6.49), and this leads him into a lengthy series of digressions on the dual kingship at Sparta and the privileges of Spartan kings (6.51-60), the careers of Demaratus (6.61-70), and Cleomenes (6.74-78) as well as a chronologically confused account of the warfare between Athens and Aegina (6.87-93). The relevant information that can be gleaned from this account is that the Athenians were convinced that the Aeginetans had given earth and water as a way of enlisting Persian assistance in their ongoing struggle with Athens. They labeled the Aeginetans traitors (6.49), and were apparently able to convince Cleomenes and his supporters at Sparta that the charge was valid (6.50). Cleomenes invaded Aegina, took hostages and handed them over to the Athenians (6.73), who steadfastly refused to return them (6.86)[28], thereby precipitating a renewal of active hostilities. For our purposes two points are important: first, if the Athenian charge was accurate then we must conclude that the Aeginetans gave earth and water not out of any great fear of the Persians but for their

[27] On the inviolability of heralds see Mosley, 1973, 84-87. Burn, 1985, 315 regards the report of the Athenians casting the heralds into the Barathron as suspicious, but notes there can be no doubt about their treatment at Sparta. Hignett, 1963, 87, would date these events to the time of Xerxes' invasion; it was, he believes, the heralds dispatched by Xerxes from Sardis who were so rudely treated.

[28] The chronological problems with Herodotus' account of warfare between Athens and Aegina are notorious. Most commentators would agree that the actions related here occurred between Darius' dispatch of heralds to Greece in 491 B.C. and the Battle of Marathon in 490 B.C.; see most recently Figueira, 1993, 113-149 who cites the earlier literature.

own selfish reasons[29]; second, the Spartan decision to invade Aegina and the Athenian determination to stir up trouble with a state that had recently given earth and water to the king reiterates how utterly uninhibited the Athenians and Spartans were when it came to acting in a manner that the king could only interpret as hostile.

While some of the mainlanders and islanders may have submitted to Darius' demands, events of 490 B.C. suggest that there is little to support Herodotus' contention, quoted above, that all the islanders approached by Darius' heralds gave earth and water. At best only the weakest possible case can be made for Paros, whose inhabitants were later accused of Medism (6.133), and Rhenea[30] being safely in the Persian fold as the invasion force of Datis moved across the Aegean. Most of the inhabitants of Naxos fled before the arrival of the Persians (6.96) and there would have been no need to do so if they had given earth and water a year earlier. That they had not done so seems clear from the report (6.96) that those Naxians who had not fled were enslaved and the city was burnt. The Delians also fled before the arrival of the Persians (6.97) and their destination is instructive. They fled to Tenos (6.97) and if they were seeking safety in flight, they would hardly move to an island that had already surrendered to the Persians. From the departure of the Persian fleet from Delos to its arrival at Carystos (6.97-99) Herodotus provides no specific geographical points. He says only that the fleet put in at various, unnamed islands and enrolled some of the islanders into their army and took hostages (6.99). Minimally these unnamed islands must include, in addition to Tenos, Syros and Andros, which are on a direct sail from Delos to Carystos. Since the Persians deemed it necessary to take hostages, it does not seem likely that these islands had earlier given earth and water either[31]. All of this suggests that if heralds were dispatched to demand earth and water in 491

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[29] I know of no evidence to support the contention of Balcer, 1995, 205 that Aegina gave earth and water "because it benefitted from Persian trade." Jefferey, 1988, 366, also sees a connection between Aeginetan trade and the granting of earth and water,

[30] Herodotus 6.133 states explicitly that the charge of Medism against Paros was a pretext (πρόφασις) for Miltiades' attack. Herodotus 6.97 notes that Datis anchored off Rhenea, whose inhabitants had not fled, and it was they who told him where the Delians had gone.

[31] Briant, 1996, 170-171 argues that one of Datis' charges in 490 B.C. was to subdue the islands and bring them under Persian control. Burn, 1962, 226 says that in 491 B.C. Aegina "like other island states" gave earth and water but then implausibly believes, 236, that Datis' objective in 490 B.C. was to secure control of the Cyclades.

B.C., they seem to have had little success, apart from Aegina, among the islanders. Only in the face of overwhelming force did they capitulate a year later. It may be worth noting in this regard that the Lindian Temple Chronicle *(FGrH* 532, Section D lines 1-12) informs us that during Darius' expedition the inhabitants of Rhodes took refuge behind their fortification walls, particularly at Lindos, where they were besieged and surrendered only when they ran out of water. If we can trust this report then it would be necessary to conclude that Rhodes, one of the largest Greek islands, must not have given earth and water to the king in 491 B.C. either.

Despite the successful Persian campaign across the Aegean in 490 B.C., there is no evidence of fear and panic in the only mainland states — Carystos, Eretria, Athens, Plataea, and Sparta — that we know anything about in this year. Without assistance from any quarter the Carystians refused to give hostages, and the Persians had to take the city by force (6.99). Presumably the Eretrians were aware of this, but they were not ready to succumb either. Opinion was divided there. Some Eretrians did want to surrender without a fight, but they were motivated by a desire to gain Persian assistance in securing control of the city (6.100) and not by any fear of Persian power. In the end the Eretrians decided to resist and without assistance from any other Greek state managed to hold out for six days (6.101), and undoubtedly would have held out longer had the city not been betrayed from within.

The Athenians were well informed about the factional strife at Eretria (6.100), and if they did not know for certain that the city had been delivered into the hands of the enemy, they must surely have suspected it. Nonetheless, the fall of Eretria did nothing to diminish Athenian resolve, even in the face of their own domestic problems. The exiled tyrant Hippias accompanied the invaders, and he had plenty of support in the city[32]. Indeed, it seems likely that Persian sympathizers had already been in contact with the enemy. As Schachermeyr astutely observed, the timing of the Persian advance into Attica was carefully calculated, as Datis waited a few days after the fall of Eretria before making his move. Most likely the Persians expected their sympathizers to betray the city as their sympathizers had done at Eretria, but this was not to be the case. Support for the

[32] Herodotus 6.107 and Thucydides 6.59.4. The treatment of these events by Schachermeyr, 1951, 1-35 remains fundamental, and see also Briant, 1996, 171-172, who is in general agreement.

Persians was apparently not as strong as Datis had been led to believe, and as soon as the Athenians learned that the Persians had landed in Attica they marched straight away to Marathon to engage them (6.103). They also dispatched a herald to Sparta seeking assistance (6.105). The Spartans readily agreed to come to their aid (6.106), and no ulterior motive should be read into their claim that they were forbidden by law from undertaking a campaign until the moon was full[33]. This must have been a practice of long standing at Sparta, and when the full moon did arrive and they could legally set out, they did so promptly (6.120). So anxious were they to assist against the Persians that they made the arduous trek from Sparta to Athens in just three days (6.120).

In the meantime, without the slightest hesitation the Plataeans willingly joined the Athenians at Marathon (6.108), where the generals debated whether to attack immediately or await the arrival of the Spartans. Five of the ten strategoi feared their forces were inferior and favored waiting for the Spartans (6.109), while the other five, led by Miltiades, preferred an immediate attack. When the archon Callimachus was won over to the latter position, the army moved against the Persians at once (6.109-110). Schachermeyr believes that Miltiades was of the opinion that any delay would play into the hands of Persian sympathizers in the city and this may well have been a concern. In any case, the decision to attack immediately without waiting for the arrival of the Spartans indicates that there was no paralyzing fear of the Persians as they were about to come face to face with them, despite Herodotus' contention (6.112) that prior to Marathon the very sight of the Medes threw fear and panic into the Greeks.

Although the Persians and Sakae fought gallantly and forced the Athenian center to retreat (6.111-112), the enemy was routed on both wings and fled in disarray to their beached ships, seven of which were captured before they could put to sea[34]. Herodotus' figures of 6400 Persian dead

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[33] Herodotus 6.106. Plutarch, *Moralia* 861d — 862a calls Herodotus' report an outright lie. Pritchett, 1971, 116-121 has assembled the evidence for delay in setting out for battle until the proper phase of the moon.

[34] Herodotus 6.108-116 describes the battle. The most recent discussion is that of Doenges, 1998, 1-17. Petrakos, 1996, has assembled all of the literary, epigraphic and archaeological evidence for the site and the battle but must be used with caution. He still maintains (25-26), for example, that an Athenian coin with a waning moon left of the head of the owl commemorated the battle, but this is most unlikely; see Starr, 1970, 11-12 and Kraay, 1976, 61-62.

and 192 Athenians (6.117) may not be accurate[35], but there is no reason to believe that the lighter armed Persians did not suffer heavier losses. The final embarrassment for the Persians came as Miltiades made a hasty march back from Marathon (6.116) to prevent a Persian landing at Phaleron and an attack on the undefended city. Although the Persians had carried out their threat to punish the Eretrians, once again the king's effort to punish the Athenians had ended in failure. The Athenians, assisted only by the Plataeans, had met and soundly defeated an army of the mighty Persian king and they had done so even though there was dissension in their ranks as the shield signal flashed after the battle indicates (6.115, 121-24).

It would be difficult to overestimate the importance of the Battle of Marathon in shaping Athenian attitudes toward the Persians[36]. If there had been any fear of them before the battle, it must quickly have given way to unbridled self confidence in its aftermath. The Athenians were, understandably, proud of their achievement and quick to publicize it. In a break with tradition they buried the dead on the battle field[37], under a mound of earth still visible today. An inscribed Ionic column honoring the archon Callimachus, who was killed in the fighting, was erected on the acropolis[38]. An inscription celebrating the victory was engraved on the Athenian treasury at Delphi[39], and numerous Persian objects, including many arrow heads and two inscribed Assyrian style helmets, one dedicated by the Athenians the other by Miltiades[40], were placed in the sanctuary at

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[35] Avery, 1973, 757 observes that 192 multiplied by 33.33 equals 6400 but see Wyatt, 1976, 483-484. Pausanias, 1.32.3 saw inscriptions at the site listing the Athenian dead by tribe.

[36] On this see the discussion of Loraux, 1986, 155-171.

[37] Thucydides 2.34.5 remarks that the burial of the dead at Marathon rather than in the public burial ground just outside the Dipylon Gate was a break with tradition; on the tumulus see Petrakos, 1996, 18-23; Pritchett, 1985, 94-259, is an exhaustive treatment of the burial of Greek war dead.

[38] Meiggs & Lewis, 1988, 33-34 #18, whose discussion shows that there are many problems with both the monument and the inscription; it has even been argued that the monument had nothing to do with Callimachus; see Raubitschek, 1940, 53-59; Harrison, 1971, 5-24; Hansen, 1988, 482-483, and Petrakos, 1996, 47-49, who offers six different versions of the text of the inscription,

[39] Meiggs & Lewis, 1988, 35 # 19, who note that the date of the inscription is not entirely certain.

[40] The Persian material from Olympia has recently been reexamined by Baitinger, 1999, 125-139, who argues forcefully that many of the Persian objects found there were dedicated after Marathon; see also Miller, 1997, 29-41. On dedications of armor generally see Pritchett, 1979, 240-276.

Olympia. Simonides may have written epigrams commemorating the triumph[41] and in the decades following the battle a trophy was erected at the site of the victory[42] a painting of the battle decorated the Stoa Poikile in the agora[43] and Aeschylus allegedly composed his epitaph in which he boasts of participating in the fighting[44].

Equally important in shaping Greek thinking about the Persians was a series of events that led the Athenians to the firm belief that the gods had come to their assistance. According to Xenophon *(Anabasis*, 3.2 12) and Plutarch *(Moralia,* 862b-c) the Athenians, prior to the battle, had promised to sacrifice to Artemis a goat for every Persian killed in the engagement. When there were more enemy dead than goats available, the Athenians offered instead 500 goats and promised to repeat this sacrifice annually. They were still doing so in Xenophon's day, nearly a century later. Nor was Artemis the only deity to provide succor. As Phidippides, the Athenian herald dispatched to Sparta, was in the hills above Tegea the god Pan, hitherto ignored by the Athenians, appeared before him and promised assistance. After the battle a temple of Pan was built beneath the Acropolis, where annual sacrifices and a torch race were observed. He was also worshiped at a cave not far from the battle field at Marathon[45]. Finally, a thanksgiving festival for the victory was instituted which, if Plutarch *(Moralia*, 349e and 862a) is correct, was still being celebrated in his day more than half a millennium later. Clearly, the Athenians believed that they owed their victory, in part at least, to divine assistance and this must have been a comfort not just to them but to all Greeks.

This must be kept firmly in mind as we move on to a consideration of Athenian domestic politics in the decade after Marathon, for virtually all treatments of this subject in recent years rest on the underlying assumption

[41] Page, 1981, 218-231 discusses a number of epigrams attributed to Simonides, but it is not always clear whether they should be assigned to 490 B.C. or 480 B.C.; see also Meiggs & Lewis, 1988, 54-57 # 26. Barron, 1990, 133-141 argues that they all concern the Battle of Salamis, not Marathon.

[42] Vanderpool, 1966, 93-106.

[43] Pausanias 1.15.3; Shear, 1984, 5-24 dates the remains to the second quarter of the fifth century B.C.; see also Francis & Vickers, 1985, 99-113.

[44] On the epigram see Page, 1981, 131-132 who doubts that it is genuine.

[45] Herodotus recounts these events at 6.105. On the cave see Pausanias 1.32.7 and Papademetriou, 1958, 15-22. Page, 1981, 194-195 gives the text of an inscription that once graced a statue of Pan dedicated by Miltiades, but it may or may not be genuine. On the cult of Pan at Athens see Borgeaud, 1988, 133-138.

that concern for the Persians was an important, if not the dominant force driving politics at Athens in this period.[46] Facts and presumed facts are interpreted in the light of this assumption and any evidence to the contrary is simply ignored. The most important pieces of evidence invariably disregarded are, first of all, the divinely assisted defeat of the Persians on the field of battle at Marathon in 490 B.C., a victory which even the Spartans regarded as praiseworthy (6.120), and secondly, the report that in 483 B.C. when Themistocles wanted to build up the Athenian navy he had to appeal not to concern about Persia but about Aegina. The Persians, nonetheless, dominate virtually all recent treatments of the intervening years.

An illustrative case in point is the discussion surrounding the first three Athenians to be ostracised in the years between 488 and 486 B.C. Our primary sources of information are *Ath. Pol.* 22 and the still unpublished hoard of 8,653 ostraca discovered in the Kerameikos more than three decades ago.[47] According to *Ath. Pol.* 22, Hipparchus, a relative of Peisistratus and leader of his supporters was ostracized in 488 B.C., in the first of three successive ostracophoria in which friends of the tyrants were sent packing. The Alcmaeonid Megacles, son of Hippocrates, was the victim in 487 B.C., while in the following year a third, unnamed friend of the tyrants was also ostracized. On the surface this surely looks as if the Athenians were attempting to rid themselves of those suspected of Persian sympathies, for the Peisistratids did have the backing of the Persians and the Alcmaeonids had allegedly flashed a signal after Marathon (6.115).[48] The Kerameikos ostraca are then invoked to support this interpretation. Although there was only one single ostracon calling for the ostracism of Hipparchus, many ostraca, 4145 or some 48% of the total, bore the name of Megacles and were promptly assigned to the year of his ostracism, 487

[46] I cite only general treatments of the period here, more specialized studies will be referred to in notes that follow: see Hammond, 1988, 518-526; Ostwald, 1988, 336-342; Osborne, 1996, 330-332.

[47] Although discovered in 1966, the first published notices of these ostraca seems to be those of Daux, 1968, 732-733 and Willemsen, 1968, 24-29. A few ostraca were found in the previous year and published by Willemsen, 1965, 100-126. The final reckoning is given by Willemsen & Brenne, 1991, 147-156 whose figures I employ throughout.

[48] Murray, 1983, 264 speaking not just of these three ostracisms but of all those that occurred in the 480s states it succinctly: "The most obvious factors behind these ostracisms are mistrust of the Peisistratid and Alkmeonid families and allegations of connections with Persia."

B.C. From this it was simply assumed that most of the shards in the cache should be dated to the 480s[49].

With this approximate date for the ostraca seemingly secure the next step was to identify the third, unnamed friend of the tyrants ostracized, according to *Ath. Pol.,* in 486 B.C. From the beginning there was virtual unanimity that the primary candidate for that dubious distinction was Callias, son of Cratias, whose name occurs on 718 of the Kerameikos ostraca[50]. He is otherwise unknown but may well have been an Alcmaeonid[51]. Although there is no evidence that he was ever ostracized much less that he was ostracized in 486 B.C., as an Alcmaeonid it was natural to suspect that he was sympathetic to the Persians. This suspicion was then apparently confirmed by sixteen ostraca bearing his name. On fifteen of these ostraca Callias is called ὁ Μῆδος, the Mede, or is said to be from the Medes, ἐκ Μὴδων. On the sixteenth his name occurs on one side while on the other a male, presumably Callias, is depicted in the garb of a Persian archer[52]. If these ostraca were actually cast in 486 B.C., it would be reasonable to conclude that there was indeed concern for the Persians at that time, and for three decades the view prevailed that if Callias was not ostracized in 486 B.C. then certainly the shards linking him to the Persians were to be dated to the 480s[53]. Unfortunately for its many proponents, most of the ostraca in this hoard have now been redated to the 470s[54], and three

[49] See, for example, the articles of Daux and Willemsen cited above in n.47 and also Vanderpool, 1973, 231-238 and Ghinatti, 1970, 132-144. The most complete early discussion is that of Thomsen, 1972, 61-108.

[50] On the number of ostraca see Willemsen & Brenne, 1991, 152; only Megacles, son of Hippocrates, with 4145 and Themistocles with 1592 had a greater total. So far as I can determine Daux, 1968, 732, was the first to suggest that Callias was ostracized in this year. Among those who accept that see Bicknell, 1972, 65; Balcer, 1979, 40; Mattingly, 1971, 282; Williams, 1978, 103-113; Thomsen, 1972, 97-100; Vanderpool, 1973, 235-236. Numerous others regard his ostracism in this year as probable or highly likely. From the beginning Lewis, 1974, 1-4 was a lonely voice urging caution because of the mixed nature of the find.

[51] Bicknell, 1972, 64-71 argues that he was an Alcmaeonid and see also Shapiro, l982, 69-73.

[52] Brenne, 1992, 173-177 and Brenne, 1994, 21-22.

[53] Among the attempts to understand Athenian history in this decade on the basis of this reconstruction see Bicknell, 1972, 64-76; Karavites, 1977, 129-147; Podlecki, 1975,185-194; Balcer, 1979, 27-49; Williams, l982, 521-544, and the works cited in n. 46.

[54] Willemsen, 1991, 137-145, and Brenne, 1994, 13-24 notes that some ostraca for Callias form joins with ostraca for Megacles, and hence the two men must have received votes in the same ostracaphoria not in the 480s but in the 470s; Lewis, 1993, 51-52 was able to see his early call for caution vindicated.

decades of scholarly ingenuity based on their misdating must be dismissed. It can now be stated with some confidence that Callias, son of Cratias, was not ostracized in 486 B.C., and the shards identifying him as the Mede or from the Medes tell us nothing about Athenian politics in that year or at anytime in the 480s.

Consideration of the ostraca for one other individual, Callixenus, a known Alcmaeonid, is obligatory here for they too have been dated to the decade of the 480s and are thought to indicate Athenian concern for the Persians. Some 280 ostraca bearing his name have been found, mostly in the agora[55]. Only two of these ostraca are pertinent to the present discussion; on one of these the family name Alcmaeonid can be restored with reasonable certainty. On the other there is enough of Callixenus' name so that restoration is quite certain and beneath that are the words [ὁ πρ]οδότες, the traitor[56]. Apart from these 280 ostraca Callixenus is unknown and it was apparently those ostraca confirming his Alcmaeonid lineage and labeling him a traitor that led to the dating all of the ostraca naming him to the 480s. That date, in other words, has nothing substantial to recommend it and it may be significant, in this regard, that two ostraca with his name were included in the Kerameikos find now dated to the 470s[57]. Indeed, the entire group of Callixenus ostraca may well date from that decade. Even if they should date from the 480s, however, this is hardly justification for the sweeping statement of Lazenby who asserts "that the Alkmaionidai as a whole were regarded as traitors is suggested by the *ostraka* bearing the name 'Kallixenos,' one of which describes him as 'of the Alkmaionidai,' another as 'traitor' (προδότης)."[58]

The ostracism of the Alcmaeonid Megacles in 487 B.C., the presumptive ostracism of Callias son of Cratias in the following year and a single ostracon labeling the Alcmaeonid Callixenus a traitor have all been seen, consciously or otherwise, as proof that the Alcmaeonids were willing to

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55 These ostraca are published by Lang, 1990, 66-88; see also Stamires &Vanderpool, 1950, 376-390.

56 Lang, 1990, 83 and 88, numbers 524 and 589.

57 Willemsen & Brenne, 1991, 152; Thomsen, 1972, 9, 96, 106 notes that Callexinus' ostraca are frequently found in association with those for Aristeides, Hippocrates son of Alcmaeonides and Themistocles. Perhaps he was a candidate for ostracism toward the very end of the decade of the 480s, when concern for the Persians was a lively issue at Athens.

58 Lazenby, 1993, 81-82 who accepts a dating in the middle of the 480s. Similar sentiments are expressed in a number of the works cited in the previous notes.

collaborate with the Persians and by implication that they must have been guilty of flashing the shield signal after Marathon. Herodotus does report that a shield signal was flashed and that the Alcmaeonids were the prime suspects (6.115), but he goes out of his way to exculpate them (6.121-124). His defense is far from convincing[59], but the bottom line, surely, is that no charges were ever brought against them. Had there been even a scintilla of evidence, formal charges of high treason would inevitably have been brought forth, if not by some well meaning patriotic fellow citizen then certainly by one of their numerous political enemies. That no such charges were ever laid upon them is too significant to be ignored, and so too is the report of *Ath. Pol.* (22.8) that in 480 B.C. all those Athenian citizens previously ostracized were allowed to return home. It hardly seems likely that the Athenians would willingly allow men who had recently been ostracized for pro-Persian sympathies to return to the city at perhaps the darkest moment in its history. With Xerxes' invasion looming on the horizon, they had problems enough without inviting enemy sympathizers into their midst[60].

In the final analysis *Ath. Pol.* clearly implies that the ostracisms of the years 488-486 B.C. resulted not from any fear of the Persians but from a genuine fear of tyranny, and not a shred of credible evidence has been advanced to controvert that implication. Indeed in the years between 490-483 B.C. the Athenians seem to have been preoccupied with protecting the new democracy against would be tyrants, implementing constitutional change and carrying on the war with Aegina. Here too in connection with the latter is further indication that Persia was not an overriding concern. Although chronology is difficult to establish, apparently not too long after Marathon warfare between Athens and Aegina was renewed[61]. This conflict, which initially did not go well for the Athenians, highlighted their deficiency in naval power for they were forced to lease ships from the Corinthians (6.89). This undoubtedly enabled Themistocles to invoke

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[59] Plutarch, *Moralia* 862c-863b notes the many inconsistencies in Herodotus' defense of the Alcmaeonids; see also How & Wells, 1912, 2. 115-116, 359-360, and Hart, 1982, 12-16.

[60] Stockton, 1990, 36-38 rightly recognizes that such behavior would be illogical and calls the whole story of the shield signal "a canard."

[61] Herodotus 6.88-94. Most scholars would date the war after Marathon; see Figueira, 1993, 113-149 who cites the earlier literature. Hammond, 1955, 406-411 prefers a date before Marathon.

Athenian fear of Aegina when he introduced his motion to build a navy with the newly found revenue from Laurium in 483 B.C. Clearly, if the Athenians were so ill prepared militarily that they did not have sufficient ships to wage war successfully against tiny Aegina, and were seemingly unconcerned about this until 483 B.C., then we can only conclude, as did Victor Ehrenberg long ago[62], that in the years after Marathon they were not expecting the Persians to return anytime soon.

What little we know about Persian history in these years reinforces this conclusion[63]. In June of 486 B.C., the Egyptians revolted from Persian control, and there was apparently trouble in Palestine as well. Before the Egyptian revolt could be suppressed, Darius died in November of that year. Contrary to Herodotus' report (7.2-3), the succession of Xerxes apparently went off without incident[64], but he had no time to worry about the Greeks until order was restored throughout the kingdom. Egyptian records indicate that only in January 484 B.C. was the revolt fully suppressed there. But this was not the end of Xerxes' problems with rebellious subjects. In August 484 B.C. Bel-Shimani led a revolt in Babylon and in September or October 482 B.C. another attempt to cast off the Persian yoke was led by Shamash-eriba. How much the Greeks knew about the king's domestic problems is not easy to determine, but even if they were completely ignorant of them they would have known that for some time now all had been quiet on the eastern front. It is in this context that Themistocles' appeal to Athenian enmity with Aegina and not to any overwhelming fear of the Persians when he called for the building of a fleet of triremes in 483 B.C. must be viewed.

This report seems to be in sharp conflict with the information Herodotus provides on Xerxes' preparations for the invasion of Greece.

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[62] Ehrenberg, 1968, 141: "Apart from him [Themistocles] (and perhaps Cleomenes), the Greeks were acting in these years (about 488-484) as if there was no possible threat of a new Persian attack." This is contrary to Plato, *Laws* 698c- 699c who later rationalizes that the Athenians were terrified after the fall of Eretria and that after Marathon endless threats and stories of the king's preparations for another attack circulated. I seriously doubt that either Themistocles or Cleomenes was blessed with the prescience awarded them by Ehrenberg.

[63] On the events described in this paragraph see Olmstead, 1948, 234-237; Cook, 1983, 99-100; Balcer, 1995, 224-230 and Briant, 1996, 173. Rollinger, 1993, 218-226 and Horowitz, 1995, 61-67 discuss the evidence for the Babylonian rebels.

[64] Both Olmstead, 1948, 215-218 and Briant, 1996, 535-537 argue that the matter of succession had been settled much earlier.

These preparations, which included the building of ships, the stockpiling of grain at five locations in Europe, the construction of bridges across the Hellespont, the Strymon and other rivers and the digging of the canal across the isthmus where Mt. Athos is situated, went on for four full years (7.20-25). Although this figure is readily accepted without question[65], there is, as we shall see, little reason to believe that it is accurate. Certainly, none of the preparations readily visible to the Greeks, such as the bridging of the Hellespont or the digging of the canal across the peninsula at Athos, which Herodotus says took about three years to complete (7.22), could have been underway in 483 B.C. If they had been, Themistocles would surely have brought it up in his appeal to the Athenians to build a navy.

Moreover, most of the preparations Herodotus talks about were not time consuming. We know, for example, that the Athenians built a fleet of 200 triremes and trained crews to man them in three years or less[66]. If a single Greek polis could do that, it should not have taken the vast Persian Empire, with a coastline including both sides of the Bosphorus and Hellespont and extending from the Black Sea to Cyrene just in the Mediterranean, four years to construct the necessary triremes and horse transports. Evidence from Rome would seem to bear this out. In 261 B.C. the Romans, without a navy, decided to build 20 triremes and 100 quinqueremes, a significantly larger ship than the triremes employed by the Persians (Polybius 1.20.9). By the very next year they had built the ships, trained crews (Polybius 1.21.2-3), developed the boarding bridge (Polybius 1.22.3-9) and defeated the Carthaginians in a naval battle off Mylae (Polybius 1.23.6-10). A few years later, after much of the fleet had been destroyed in a storm, the Romans built 220 warships in just three months (Polybius 1.38.5-6), and at a later date, Caesar's forces in Gaul constructed about 600 cargo and pack animal bearing ships as well as 28 warships over the winter months of 55-54 B.C[67].

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[65] The figure is frequently repeated and passed over in silence as for example by How & Wells, 1912, 2, 133, 369, Hignett, 1963, 95, and Briant, 1996, 544, or is wholly or largely accepted, as for example, by Green, 1996, 52-53, Wallinga, 1993, 160-161 and Burn, 1962, 318. Lazenby, 1993, 97 believes preparations can only have gone on for three years.

[66] On the absence of an Athenian navy before Themistocles see Haas, 1985, 29-46 and de Souza, 1998, 271-293; on Themistocles' building program see Wallinga, 1993, 148-157 who surveys the earlier literature.

[67] Caesar, *Bellum Gallicum* 5.1-2, and see Morrison, 1996, 123-124 and also 43-55, where he discusses the First Punic War.

Stockpiling grain at five locations in Europe (7.24-5), bridging the Hellespont and building a canal across the promontory at Mt. Athos were not tasks of lengthy undertaking either. Herodotus' report (7.22) that the digging of the canal went on for about three years is almost surely in error. Isserlin, who has examined the site carefully and extensively, concludes that the canal could have been constructed in 60 to 80 days[68]. Nor was the construction of bridges a time consuming task. Caesar needed but ten days, after all the necessary materials had been gathered, to construct his first bridge across the Rhine (*BG* 4.l8) and with the experience gained on that project the second bridge was erected "within a few days" *(BG* 6.19). There is also important evidence from the brief reign of the Emperor Caligula. In a project viewed by some Romans as a deliberate effort to outdo the bridge building feats of Xerxes, Caligula had constructed what was most likely the longest bridge of ships ever constructed in the ancient world (Suetonius, *Gaius Caligula 19:* Dio 50.17.1-11). It consisted of a double line of merchant vessels extending from Baiae to Puteoli, a distance of more than three miles. On top of the ships an earthen roadway was laid and lodging areas complete with running water were constructed along its course. Nonetheless, this elaborate project was completed, according to Dio, before ships could be brought to the site from the far corners of the empire.

To return to Herodotus and the Persians, there is nothing to suggest that Darius needed any great length of time to bridge either the Bosphorus or the Danube (4.83-89) during his Scythian campaign, and that Xerxes' bridges required no lengthy period of construction seems clear from the rapidity with which replacements were ready after the original bridges collapsed in a storm[69]. According to Herodotus (7.33) the bridging of the Hellespont was in progress while Xerxes was at Sardis; and in all likelihood construction on it, as well as on the canal, began only after the king's arrival at the satrapal capital. This would explain why we hear of no great concern for the Persians among the Greeks until the fall of 481 B.C. when

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[68] Isserlin, 1991, 83-91, and with others, 1994, 277-284 and, 1996, 329-340.

[69] Herodotus 7.34-36 describes the bridges, one of 360 fifty-oared ships and triremes and the other of 314, bound together with flaxen and papyrus cables. The best modern discussions are Hammond, 1988, 527-532 and Hammond & Roseman, 1996, 88-107. Stronk, 1998/1999, 59-65 believes that Herodotus' account is not entirely accurate. Beloch, 1911, 90-91 calculates that Herodotus' ship figures are likely to be accurate, but he believes that they were cargo ships not warships. On the ease of constructing bridges of ships see Arrian 5.7.3-4.

they met, presumably at the Isthmus, to consider a common defense (7.145), or rather slightly earlier than that when the Argives (7.148) and the Athenians twice (7.140, 142) consulted the oracle of Delphi. For what it may be worth, Diodorus Siculus says (11.2.4), that when Xerxes arrived at Sardis he divided his army and sent a sufficient number of men ahead to bridge the Hellespont and dig the canal; in other words, that construction on both projects began only after Xerxes got to Sardis.

If Persian preparations did not go on four years as Herodotus asserts, it is legitimate to ask where he got the notion that they had. I do believe that Herodotus was an honest fellow, who went to great lengths to get information and, true to his pronouncement (7.152), simply reported what he learned whether he believed it or not. If that belief is sound, then we must conclude that Herodotus heard somewhere that Xerxes' preparations went on for four full years, that he was, in short, simply misinformed. The most likely source of this misinformation were the Persians themselves and we shall return to this matter shortly.

Herodotus, unfortunately, provides no clear and unequivocal data on how and when the Greeks first learned of Xerxes' intentions. He tells us at one point (7.239) that the Spartans were the first to know when Demaratus sent a coded message from Susa informing them of Xerxes' plans, and they, in turn, informed the other Greeks. Elsewhere (7.148-152) he tells us that the Argives were the first to know, but he had heard three different versions as to how they came by that information[70]. None of this inspires much confidence, and we can only conjecture. We do know that Xerxes spent the winter of 481/480 B.C. with his army at Sardis (7.37) and Herodotus implies that the Greeks learned of his arrival there only while they were meeting to plan their general defense in the fall of 481B.C. (7.145)[71]. This is possible but seems rather unlikely. It is

[70] In the course of relating the information about the Argives, Herodotus (7.152) informs us that it is his job to record what is said, but it is not his job to believe it The information about Demaratus informing the Spartans (7.220, 7.239), suspect in itself, is related in the context of the Spartans consulting the Delphic oracle and being told that either they will lose a king or their city will fall, which most commentators regard as *post eventum*; see Hignett, 1963, 439-440 and Fontenrose, 1978, 77-78. Balcer, 1995, 232 nonetheless accepts it as genuine.

[71] Hignett, 1963, 95 places Xerxes arrival at Sardis in the fall of 481 B.C. and the meeting of the Greeks in the late summer (p. 98); How & Wells, 1912, 2, l87 seem to place both probably in the fall of 481 B.C., as does Lazenby, 1993, 104-105; I would agree with Hammond, 1988, 540 that Xerxes was already at Sardis when the meeting took place.

much more plausible that there is a direct cause/effect relationship between these two events, that the meeting of the Greeks was prompted by the information that Xerxes was at Sardis with gigantic forces at his disposal and intent upon invading Greece. It appears, moreover, that this news took the Greeks by surprise, for at the very moment of their meeting in the fall of 481 B.C. not only were Athens and Aegina at war with one another, but other, unspecified wars were underway as well (7.145). Had there been even the slightest inkling of Xerxes' intentions earlier some effort likely would have been made to resolve these differences in a more timely manner, for the actions they now took at this meeting clearly indicate that the Greeks recognized the gravity of the situation facing them and were willing to do whatever the occasion demanded. They took the momentous decision to forego any differences separating individual states, they resolved to seek assistance from Argos, Crete, Corcyra and Syracuse, and they dispatched spies to Asia (7.145). By the fall of 481 B.C. accordingly, fear of the Persians was genuine and widespread throughout mainland Greece, and there is plenty of evidence in Herodotus to indicate that there is a direct cause/effect relationship between this fear and Persian propaganda.

One of Xerxes' first acts after his arrival at Sardis was the dispatch of heralds to Greece (7.32). Too little attention has been paid to these heralds, whose charge was two-fold: first, they were to demand earth and water and secondly, they ordered the various Greek communities to prepare meals for the king (7.32) and his army (7.119) as it advanced toward Athens[72]. As a result of this second charge the Greeks now had important intelligence. From this point on there could be no doubt about the king's intentions, which, according to Herodotus (7.138), were to punish Athens and in the process bring all of Greece under Persian domination. They knew precisely the route Xerxes planned to take and, since the cities along this route were ordered to provide sustenance for the army, they had to know something about the size of the force they were expected to feed. In other words, the ultimate source of such information as the Greeks had about the size of Xerxes' forces can only have been these Persian heralds

[72] Herodotus 7.119 says that the necessary preparations, gathering the required amounts of wheat and barley and grinding it into flour, raising livestock as well as land and water fowl and manufacturing gold and silver bowls, cups and assorted tableware, took many months.

sent out from Sardis after Xerxes' arrival there to demand earth and water from the Greeks. It may also have been from these heralds that the Greeks learned that Xerxes intended to bridge the Hellespont and cut a canal across the promontory at Mt. Athos.

Herodotus reports (7.32) that when Xerxes dispatched these heralds he expected that the Greeks, out of fear, would readily pledge earth and water, and indeed a number of them including the Thessalians, Dolopians, Enienes, Perrihabians, Locrians, Magnesians, Melians, Achaeans of Phthia and all the Boeotians save those of Thespiae and Plataea did so (7.132). Since two earlier attempts to punish the Athenians had ended in failure, and all Greeks knew this, why was Xerxes convinced that they would now be so terrified that they would instantly grant earth and water? Moreover, what was it that so terrified the nine Greek peoples mentioned above that they did instantly surrender without a fight?

The answer to both questions, I would suggest, can only be Persian propaganda, a topic which leads inevitably to a consideration of numbers in Herodotus' *History,* especially those concerning the size of Xerxes' forces, which have always been one of the thorniest problems in that work. Although some are willing to accept the numbers that he gives for the fleet, 1207 ships[73], no one accepts his guess that the army numbered 1,700,000 men (7.59-60). This figure is universally dismissed and modern estimates run from 60,000 to 300,000[74]. The usual explanation for Herodotus' inflated figures is that either he or some compatriot exaggerated the size of the Persian forces to make the Greek

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[73] Herodotus 7.89 says the navy consisted of 1207 triremes. This is the same figure given by Aeschylus, *Persae,* 341-343, where it had to fit the metrical pattern of three lines. The figure is nonetheless accepted by Lazenby, 1993, 92-94; Olmstead, 1948, 243; Grundy, 1901, 219-220; Wallinga, 1993, 161-162, 184-185. Hammond, 532-533 thinks the fleet was even larger than that, 1407 ships. At the other extreme, Beloch, 1911, 67-70 believes the fleet was no larger than 500 ships.

[74] Sallares, 1991, 47-48 argues that since the Persians failed to assimilate the peoples they conquered, they probably could not rely on many of them for military service. Beloch, 1911, 70-74 argues for a force of 60,000; Delbrück, 1908, 95-96, estimates 60-70,000 while Young, 1980, 213-239 argues that the logistics for an army of 60-70,000 men would be staggering. Barkworth, 1992, 162-167 believes that the army was a good deal less than 100,000 men. On the other extreme Cook, 1983, 113-115 argues for 300,000; Hammond, 1988, 533-534 suggests an army of 220,000 and a combined army, navy and supply service of 650,000. Maurice, 1930, 210-235, believed that the available water supply would have restricted Xerxes' forces to 210,000 men. The discussion of Lazenby, 1993, 90-96 is useful.

victory appear the more spectacular[75]. The Greeks may well have magnified the size of the enemy army and navy, but can we really believe that Xerxes' heralds did not intentionally and deliberately exaggerate beyond all reason the size of the king's forces — and the length of time he spent making his advance preparations — when they came demanding earth and water? This is precisely what we should expect of them. To believe that they gave the Greeks an honest count on either matter flies in the face of logic and everything we know about the Persians as accomplished propagandists and skilled practitioners of psychological warfare[76].

In this connection there is some important information in Persian sources which demonstrates that Persian kings were perfectly capable of manipulating the size of their forces for their own self-serving purposes. Not once in the Behistun inscription does Darius boast that he ever commanded a large army, but twice he claims[77] that his small army enjoyed success against an enemy force. This is certainly possible, of course, but playing down the size of his own forces once the revolts had been suppressed carried no military danger, but it did serve to enhance Darius' claim that he had the assistance of Ahura Mazda in his rise to power, a constantly recurring theme throughout this lengthy inscription. A more important document in many ways is the Cyrus cylinder, composed not long after the Persian capture of Babylon in 539 B.C. At one point in the text Cyrus boasts that he had so many troops that "their numbers, like that

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[75] This point is so universally assumed that citation hardly seems necessary, but see, for example, How & Wells, 1912, 2 364-366; Hignett, 1963, 350; Lazenby, 1993, 90; Grundy, 1901, 210; Balcer, 1995, 237-241; Hammond, 1988, 532 calls Herodotus' grand total "this absurd exaggeration of Herodotus."

[76] Green, 1996, 61-63 is on the right track in recognizing that "Xerxes would inflate his strength in the interests of psychological warfare" (62), but believes that the Greeks learned of these inflated numbers from the three spies dispatched to Sardis from Corinth.

[77] Kent, 1953, DB I 55-58, where Darius boasts that with just a few men he slew Gumata. In the Akkadian version, von Voigtlander, 1978, 55 translates the pertinent phrase "accompanied by a few nobles." This passage is not preserved in the Aramaic version. At DB II 18-21 Darius says that when Phraortes revolted in Media he (Darius) had only a small army with him. From this small force he apparently placed some men under the command of Hydarnes, who defeated the rebels. In that engagement, according to the Akkadian version, 4329 prisoners were taken while the number of dead could not be read with certainty. von Voigtlander, 1978, 56-57 suggested that 3827 were killed. The number of dead is not certain in the Aramaic version either, but Greenfield & Porten, 1982, 6 suggest 5827; on the Akkadian version see also Malbran-Labat, 1999, 61-74.

of the water of a river could not be established"[78] This is magnificent hyperbole and it is remarkably akin to Herodotus' pronouncement that Xerxes' army was so huge that it drank whole rivers dry as it moved along[79]. Definitive proof is not at hand, of course, but it is difficult to believe that the heralds dispatched from Sardis in 481 B.C. were not the bearers, most likely even the procreators, of this equally magnificent hyperbole. In any case, it seems likely that these heralds were the ultimate source of such information as the Greeks had about the length of time Xerxes' preparations went on and the size of Persian forces, and if Xerxes really did believe that the Greeks could be terrified into submission, then exaggerating the extent of his preparations and the size of his army and navy was the most logical way of bringing this about. This is particularly true since, at the time, no Greek state possessed anything resembling even the most primitive intelligence gathering machinery[80]. The Greeks, in short, did not have the ability to verify or refute easily any Persian claim as to the size of their forces.

The initial success of this Persian propaganda is reflected not only in the states that actually gave earth and water, and the decision of the Greeks meeting at the Isthmus to forgo their differences, but also in the attitude of the oracle of Delphi. It seems reasonable to suppose that one of the first acts upon learning that Xerxes was at Sardis preparing to invade would be to consult the oracle. It should come as no surprise, therefore, that Herodotus either quotes verbatim or paraphrases five oracles that were allegedly delivered prior to the outbreak of hostilities. Three of these five oracles are regarded by Hignett[81], following Macan, as discouraging to the

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[78] Pritchard, 1950, 315.

[79] Herodotus, as Burn, 1962, 328 reminds us, never said in so many words that the army drank whole rivers dry, but he did say (7.21) that only the great rivers did not fall short of the army's need and he firmly believed it (7.187). Specifically, he mentions the Scamander (7.43), the Black (7.58), the Lisus (7.108), the Cheidorus at Therma (7.172), the Onochonmus in Thessaly (7.196), and a salt lake in Thessaly that was drained by the beasts of burden (7.109). Even the greatest river of Achaea, the Apidanus, was barely able to provide a sufficient supply (7.196).

[80] Starr, 1974, has assembled the evidence for Greek intelligence and reached this conclusion. Russell, 1999, notes the paucity of evidence for the early period, but also remarks (8-9) that intelligence "was not desired for its own sake." Only when there was an immediate threat on the horizon did the Greeks concern themselves with it.

[81] Hignett, 1963, 439-447; on the role of the oracle in Herodotus see Elayi, 1978, 93-118 and 1979, 94-151.

Greeks, one as ambivalent and the fifth as encouraging. But this sole encouraging oracle, which Herodotus says was delivered before the war began, is highly suspect. It advises the Spartans that either their city will be destroyed or one of their kings will die (7.220). This would seem to be an obvious *post eventum* response created after the death of Leonidas at Thermopylae[82]. If so, it tells us nothing about the real attitude of Delphi before Xerxes arrived in Europe. All three of the oracles regarded as discouraging and that labeled ambivalent were delivered while the king was still in Asia; in fact, three of them were delivered prior to the first meeting of the Greeks in the fall of 481 B.C. Early on the Argives consulted the oracle and were advised to remain neutral (7.148). On first consulting the oracle the Athenians were advised to flee to the ends of the earth (7.140), and while this advice was never specifically rescinded it was tempered somewhat in a subsequent ambivalent oracle that advised them to place their trust in wooden walls (7.142). Finally, the Cretans consulted the oracle after the meeting of the Greeks at the Isthmus and were advised to remain neutral (7.169). Delphi could have had no sources of information on the size of the Persian forces not available to the Greeks as a whole, that is to say the propaganda being disseminated by the enemy, and these pessimistic responses can only be the direct result of that propaganda.

Since neither the Athenians nor Spartans were given an opportunity to pledge earth and water, for no heralds were sent to either city, they had no choice but to resist. A number of other Greek states agreed to join with them in a coalition against the invader. The first task of those Greeks determined to resist was to gather intelligence. By the fall of 481 B.C. there must have been rumors aplenty about the unimaginable size of the Persian forces about to descend on Greece. Those Greeks who had given earth and water apparently believed what the Persians told them; others may well have had doubts. Most likely it was to gain first hand intelligence that spies were dispatched to Sardis in the fall of 481B.C. (7.l45-6). Once there, they were allowed to view the king's forces without restriction, but what information they brought back to Greece on their return cannot be ascertained. It is clear, however, that some Greeks, both those who

[82] Hignett, 1963, 439-440; Fontenrose, 1978, 77-78. Georges, 1986, 14-59, argues that the oracles given to Athens were not genuine either, but were, rather, created after Artemisium and Thermopylae to induce the Athenians to abandon Attica and offer resistance at Salamis.

had previously given earth and water and those who had not, were entertaining second thoughts about their original decision. Herodotus reports that those who had refused to give earth and water were now "sore afraid, since there were not in Hellas ships enough to do battle with the invader, and the greater part of them had no stomach for grappling with the war, but were making haste to side with the invader." (7.138) Clearly Persian propaganda could boast some success, but even as Xerxes was at Abydos about to cross into Europe (7.174), the Thessalians, who had previously given earth and water, now offered to renounce that act and join with those Greeks who were determined to resist. The one condition they insisted upon was that the Greeks would attempt to guard the route into Thessaly from the north along the Peneus River between Mounts Olympus and Ossa (7.172) The Greeks readily agreed to dispatch an army of l0,000 men to Thessaly for that purpose (7.173).

If Xerxes really did expect his enemies to give up without a fight when they heard of his vast forces, then clearly Persian propaganda had not been the resounding success he anticipated. He may not have known that the Thesalians had had a change of heart, but he surely knew that some Greeks steadfastly refused to give earth and water, and in Thrace the king of the Bisalte refused to become his subject (8.116) as did the hill-dwelling Satrae tribe (7.110-111). Every effort had to be made to intimidate anyone, non-Greek as well as Greek, still determined to resist and to prevent further defections. In other words, the propaganda campaign had to be stepped up and it may well be for this reason that the Persians now enlisted the assistance of Alexander I of Macedon[83]. No sooner had the Greek army arrived in Thessaly when messengers came from Alexander advising them to withdraw because of the vast army and navy they were about to face (7.173). The Greeks did withdraw, but Herodotus was not sure whether it was this advice they received from Alexander or whether it was because they now learned that there was another route into Thessaly from the north and if Xerxes took this route, which he later did, the Greeks would be in danger of being cut off there. Either way, the withdrawal was a major victory for the Persians, for the Thessalians now had no choice but to side with them (7.174).

[83] Herodotus 7.173. On these events see Badian, 1994, 107-130, who believes (pp. 117-118) that Alexander may have been the ultimate source for some of the Persian figures we find in Herodotus. That may well be, but Alexander probably knew nothing more than what the Persians told him about the size of their forces.

These events, as noted above, transpired while Xerxes was at Abydos where he arrived at the beginning of spring 480 B.C. (7.37). Herodotus says (8.51) he spent a month at the Hellespont[84], and the question that needs to be asked is why? It is possible that the reconstruction of the collapsed bridges (7.35) contributed to this delay, but it is equally likely that the pause was premeditated. Persian propaganda had not been the resounding success the king had been counting on and not all Greeks were willing to surrender without a fight. Abydos, on the Asiatic coast just a short hop across the strait from the European mainland, was the perfect location to make one final effort to cow the Greeks into submission with a display of force and a visual spectacle of the king's might and power that could be carried by eyewitnesses to those Greeks still intent on resisting. The bridging of the Hellespont seemed to Aeschylus[85] an extraordinary achievement and so it must have seemed to many of his contemporaries as well, particularly those who actually saw the bridges. There must have been many who did, for in constructing them Xerxes took deliberate care to leave gaps so that traffic into and out of the Hellespont would not be impeded. We are specifically told that he allowed ships laden with grain to sail through to Aegina and the Peloponnesus (7.147), because, Herodotus says, the ships were only carrying grain to the same place the Persians were headed. We can be sure, however, that the crews of these ships brought tales of the stupendous bridges and the Persian forces assembled together in one spot. It was also at Abydos, moreover, that Xerxes reviewed his army and navy and contingents of his navy staged a ship race while the king looked on from his white marble throne (7.44-45). Surely this was a carefully choreographed propaganda ploy. Psychologically it would provide an uplift for his forces, but just as important was the impact it would have on the crews of Greek ships passing through the strait. Finally, no matter what one may think of Herodotus' description of the army crossing the bridges into Europe (7.54-57), it must have presented a striking sight to anyone witnessing it as any number Greek seaman must have done. These eyewitness reports of the king's forces would be the first received by the Greeks since the return of the three spies earlier sent to Asia.

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[84] Hammond, 1988, 537 places him at the Hellespont from late April until late May 480 B.C. Macan, 1908, 402-403 believes that the term month in Herodotus is not to be taken literally, but rather as an approximation.

[85] See *Persae,* 68-70; 128-132; 745-750; 799, and especially 722-723 where Aeschylus has Atossa say that Xerxes must have had divine assistance on the project.

It may also be significant that once in Europe, Xerxes was in no hurry; indeed three months would pass from the crossing of the Hellespont to his arrival in Athens (8.51). His immediate destination was the Persian fortress at Doriscus, which was no great distance from Sestos on the European side of the Hellespont[86]. From a logistical point of view this made sense, for provisions had been stockpiled there (7.25) and, with the Hebrus River nearby (7.59), there was an adequate water supply and grazing land for the livestock. Although the chronology is far from certain, Xerxes seems to have stayed fully as long at Doriscus as he had at the Hellespont[87], and again the question is why? Xerxes may well have been waiting for the completion of the road being constructed through Thrace (7.115) but other considerations may have contributed to the delay as well. If the display of force put on at the Hellespont was to have the desired effect, time was required for reports of eyewitnesses to reach southern Greece, where most of the states determined to resist were located. Evaluating these reports and arriving at decisions on the basis of them would require additional time, and if any Greeks were now willing to capitulate, it would require still further time for that news to reach the king. There is, in fact, some reason to believe that Xerxes did not passively sit by waiting for the Greeks to contact him with pledges of earth and water; he may have dispatched heralds to Greece a second time, either before setting out from Sardis, or from Abydos, or perhaps even from Doriscus.

Neither Herodotus nor any other ancient source tells us specifically that such heralds were dispatched, but that would seem to be the only explanation for Herodotus' report that after leaving Doriscus and advancing into

[86] Lazenby, 1993, 114 gives the distance from Sestos on the European side of the Hellespont to Doriscus as about 170 kilometers, a more reliable figure than that of Hammond, 1988, 537 who gives the distance from Abydos on the Asiatic side of the Hellespont as some 75 kilometers. On Xerxes march through Thrace see Archibald, 1998, 88-90.

[87] The chronology of events throughout the whole course of Xerxes' campaign admits of little certainty. The most useful items in the lengthy bibliography are Macan, 1908, 398-412; Beloch, 1911, 2:2, 46-56, Hignett, 1963, 379-385, 448-457; Lazenby, 1993, 118-123; Hammond, 1988, 588-591. Burn, 1962, 338 remarks that the 300 mile trip through Thrace took about 45 days and that Xerxes did not reach Macedonia until July. Much of this 45 day period must have been spent at Doriscus, a delay which has not received much attention by students of the war. One exception is Hammond, 1988, 537 who believes that Xerxes spent about a month at Doriscus because he was intent on harvesting the grain growing in the region and that he did not leave there until late June. Macan, 1908, 411 also has Xerxes at Doriscus for about a month.

the hills of Pieria in southern Macedonia, where Xerxes spent many days, heralds arrived at his camp, some with, some without pledges of earth and water (7.131). Herodotus simply assumes that these were the heralds that Xerxes had dispatched from Sardis upon his arrival there, and interpreters of Herodotus from Grundy to Briant[88] either accept this assumption and pass over it in complete silence or simply ignore this passage and assume that the heralds must have returned to Sardis at a much earlier date[89]. Surely, these cannot be the heralds that were dispatched from Sardis in the summer or fall of 481 B.C., eight, nine or even more months earlier. If we accept this proposition then we must believe that Xerxes had no idea which Greek states had given earth and water and which had not until he was at the very borders of Thessaly, and this is hardly credible. Either Herodotus is mistaken and no heralds brought news to the king at Pieria, or if that report is accurate, then Xerxes must have sent out heralds on a second occasion. If, as argued above, the king was counting on a display of force at Abydos to induce some Greeks to have a change of heart, the dispatch of envoys to receive pledges of earth and water would be a perfectly reasonable course of action for him to adopt. Whether he sent out heralds or not, the lengthy period of time spent at Doriscus may well have been dictated by the king's hope that some Greek states might now be willing to give earth and water.

Whatever the reasons behind the king's delay the time spent at Doriscus was put to good use. The ships were hauled out of the water and allowed to dry (7.59), an essential maintenance operation[90], but one that may have carried some psychological impact as well, for as any seaman knew a dry ship was a lighter ship and a lighter ship was a faster ship. It was here, too, that Xerxes reviewed his army and navy (7.100), and this must have been an impressive spectacle if by chance it was viewed by any Greek. The king, accompanied by his scribes, moved among his land forces in his royal chariot and reviewed the navy from his royally appointed Sidonian ship with its golden canopy (7.100).

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[88] Grundy, 1901, 225-226; How & Welles, 1912, 2, 176-177; Briant, 1996, 545; only Burn, 1962, 343 makes a valiant effort to explain why the heralds return to Xerxes only at this point. He suggests that, relying on the traditional inviolability of heralds, they remained in this region, presumably for six months or more, to remind any Greeks that wavered of the sacred pledge they had made to the king.

[89] Hammond, 1988, 544 and Balcer, 1995, 232.

[90] Harrison, 1999, 168-171 on the importance of this operation.

It was also at Doriscus, according to Herodotus (7.60), that the army was counted by ethnic contingents, which Herodotus then proceeds to enumerate. Most commentators scoff at the method Herodotus says was employed to count the troops; namely, 10,000 men were herded into an area which was then surrounded by a wall. These 10,000 men were then withdrawn and the walled off area again filled, presumably with another 10,000 men, until all had been counted[91]. Herodotus himself concluded that the army consisted of 1,700,000[92] men and this would have necessitated repeating this operation 170 times. We might legitimately doubt the accuracy of the story, but unless we are to believe with Fehling[93] that Herodotus simply made things up as he went along, we must believe that he heard from some informant, possibly even several informants, that the army was counted at Doriscus in essentially the manner he describes. In fact, Fehling[94] believes that Aeschylus' reference in the *Persae* (980) to the king's Eye as the counter of tens of tens of thousands provided all the inspiration Herodotus needed to make up the story about the counting of the troops. It seems just as reasonable to suppose, however, that both the tragedian and historian had each heard some story about counting by units of 10,000 men[95]. The story may not be, probably is not true, but it is such brilliantly conceived propaganda that it does not strain either the evidence

[91] Herodotus 7.60. How & Wells, 1912, 2 364-366 call the story "an obvious folktale which cannot be taken seriously" (366), and attribute Herodotus' figure on the size of the force in part "to an extravagant over-estimate deliberately adopted by the historian" (364). Cook, 1983, 113 calls it "a curious story," but offers no opinion on its historicity. Burn, 1962, 329 calls the story childish. Grundy, 1901, 218 says the method may, or may not have been employed. Lazenby, 1993, 90 says the story "though not impossible, does not seem very likely." Hammond, 1988, 533 says "Herodotus probably wrote tongue in cheek." On the review of the army at Doriscus see the remarks of Briant, 1996, 209-211, and 1999, 1116-120 who believes that Xerxes was not reviewing his military forces but the ethnic and cultural diversity of the peoples of the empire.

[92] Herodotus 7.60; Lazenby, 1993, 90 makes the interesting observation that the largest numbers we have for Persian forces come from writers closest in time to the actual invasion and the further removed we get the smaller the numbers become. On numbers in Herodotus generally see Lateiner, 32-33, 238. Keyser, 1986, 230-242 finds only seven errors of calculation in the *Histories* and they can usually be easily explained.

[93] Fehling, 1989; in rebuttal see Shrimpton & Gillis, 1997, 229-265; Dover, 1998, 219-225; Pritchett, 1993, takes on Fehling and other critics of Herodotus.

[94] Fehling, 1989, 247-248.

[95] Hirsch, 1985, 184 n. 8 reports that one of the scholiasts of Aeschylus, which I have not seen, says specifically that the King's Eye counts the armies but this can be no more than a guess.

or the imagination to see the Persians themselves as its ultimate source. What better way of demoralizing any Greeks still contemplating resistance than by reminding them of the many different ethnic groups included in the king's army, while at the same time circulating the misinformation that his army was so huge that it had to be reckoned in units of 10,000 men? This is as many men as the Greeks were able to muster when they briefly thought about defending the route into Thessaly (7.173), and probably more men than they had at Marathon a decade earlier.

So far as we know at least, no offers of surrender came forth, and after probably close to a month at Doriscus Xerxes renewed his advance toward Greece. It must have become painfully obvious by now that his initial expectation that the Greeks would give up without a fight had been overly optimistic and he could not dally at Doriscus forever. The time for propaganda was over; he either had to call off the invasion and return to Asia, or prepare to do battle, and he chose the latter.

It is not likely that any propaganda initiatives had been planned beyond the initial exaggeration of Persian forces and the display of might staged at the Hellespont, though a few things might have been devised on the spur of the moment later. While there may have been solid logistical reasons for splitting the army into three separate units upon leaving Doriscus[96] and moving toward Greece with three separate forces, this may have carried some psychological clout as well. It is certainly possible that Xerxes' behavior at Acanthus, where he declared the Acanthians his guests and friends, presented them with a Median dress and praised them for their assistance in digging the canal (7.116) was a subtle reminder that cooperation would be rewarded[97]. It is also possible that the race between Persian and Thessalian horses, which Xerxes had heard were the fastest in Greece, was staged more to impress the Greeks than anything else[98]. Finally, as the

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[96] Herodotus 7.121. Müller, 1975, 1-11 argues that this report can only be partly accurate.

[97] There is plenty of evidence to indicate that royal rewards for such assistance were commonplace in the Persian Empire. Herodotus 8.90 reports that at the Battle of Salamis Xerxes' scribes wrote down the name of any ship captain who performed well and those who did were later rewarded (8.85). This suggests that such rewards were not haphazardly and arbitrarily handed out. Records were kept, rather, and rewards dispensed accordingly. This would seem to be confirmed by oriental sources: *Esther* 2.21-23; 6.2-3, DNb 16-20, 55-60 and especially the Behistun inscription, DB I 20-24 and DB IV 61-71. Donner & Röllig, 1962, #14, offer a Phoenician inscription in which Eshmunazzar, King of Sidon, boasts of being rewarded with substantial territory in return for services rendered.

[98] Herodotus 7.196; on the route through Thessaly see Decourt, 1990, 81-84.

Persians moved southward, the territory of Greek states and peoples that refused to give earth and water, such as the Phocians (8.32-33), Thespae, Plataea (8.50) and Athens (8.50,53) was plundered and burned and this can only be viewed as a carefully calculated use of terror to frighten other obstinate Greeks into the Persian camp[99].

It is a tribute to the success of Persian propaganda that as hostilities were about to break out at Thermopylae and Artemisium the Greeks were apprehensive and fearful (7.207; 8.4). It is also reported that there was fear and dread among the Greeks, especially the Peloponnesians, on the eve of the battle of Salamis (8.70). Many wanted to abandon that location and make a stand at the Isthmus (8.49, 56, 74). Not all Greeks were as terrified as those of the mainland, however. Although the bulk of the Ionians remained loyal to their Persian overlord, despite Themistocles efforts to win them over (8.22), a number of islanders seem not to have been convinced of Persian superiority from the outset. The Ceans, Styrians and Cythians provided ships for the Greek fleet (8.46), while Seriphos, Siphnos and Melos never gave earth and water to the king (8.46). The Naxians did send four ships with orders to assist the Persians, but they deserted to the Greeks[100] and the Parians were still not sure which way the fighting would go just before Salamis (8.67). In addition to the reluctance of these island states to join the Persians are two defections worthy of note. Even during the first naval engagement at Artemisium, Antidorus of Lemnos deserted the Persians and went over to the Greeks (8.11), as did a single ship from Tenos just before the battle of Salamis (8.82). These defections by ships from Tenos and Lemnos and the reluctance of other islanders to embrace wholeheartedly the Persian cause stands in sharp contrast to the

[99] That the Persians understood the use of terror as a weapon of psychological warfare is clear from the Behistun inscription (DB II 70-78) where Darius boasts that when the Median rebel Phraortes was captured and brought before him, "I cut off his nose and ears and tongue, and put out one eye; he was kept bound at my palace entrance, all the people saw him. Afterward I impaled him at Ecbatana; and the men who were his foremost followers, those I (flayed and) hung out (their hides stuffed with straw)." The Akkadian version (Section 25) is similar, but the last line is worth quoting from von Voigtlander's translation: "I executed his nobles, a total of (47). I hung their heads inside Ecbatana from the battlements of the fortress." At Arbela, the Sargatian rebel Ciçantakhma suffered a similar fate (DB II 78-91).

[100] Herodotus 8.46. Plutarch, *Moralia,* 869a takes Herodotus to task here citing Hellanicus (*FGrH* 4 F 183) as saying that the Naxians sent six ships and Ephorus (*FGrH* 70 F 187) that they sent five ships.

fear expressed by the mainland Greeks. It is possible, though certainly not provable, that the islanders had more accurate information about the actual size of the Persian forces. This is most assuredly true of the Lemnians and Tenians who had originally accompanied the Persians and been part of their forces, but beyond that we cannot say.

If Persian propaganda was as ubiquitous during Xerxes' invasion of Greece as has been posited above, then traces of that propaganda should be discernable not just in the *Histories* of Herodotus, but also in the works of other contemporaries and near contemporaries of the invasion. Apart from Simonides and Aeschylus, however, there is not much to go on. Neither *The Fall of Miletus* nor *The Phoenician Women* of Phrynichus survives[101]. Theognis does briefly mention the war of the Medes, most likely a reference to Marathon[102], and there are brief references to Artemisium and Salamis in Pindar[103]. This reluctance of contemporary authors to say much about the wars is surprising, for we know that the Persians became a popular subject for writers in the years after Salamis[104]. In addition to Herodotus, three authors, the inscrutable Dionysius of Miletus, Hellanicus of Lesbos and Charon of Lampsacus wrote *Persica*. Unfortunately, only brief fragments survive and they do little to enlighten us[105].

In the end we are left with only Simonides and Aeschylus, important sources, for both men were resident in Athens at the time of the invasion and Aeschylus an active participant in the war. They, like Herodotus, were convinced that Xerxes marched on Greece with massive force. Only a few brief fragments survive from the poems that Simonides wrote on various battles[106], but we do have the epitaph, quoted by Herodotus (7.228), that he composed for the Spartans who fell at Thermopylae. In its few lines we

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101 Snell, 197l, 69-79 has collected the few fragments that survive.

102 Theognis, 773-775; Highbarger, 1937, 98-110 argues that the reference is to Marathon.

103 Pythian 1 75-78 and Fragments 76-77 and 109 in Maehler, 1989; generally see Kierdorf, 1966, 29-47.

104 On this see Tuplin, 1996, 132-152 and the important work of Hall, 1989,

105 None of these figures was, apparently, a contemporary of the invasion but each may have written before Herodotus. The fragments of these *Persika* have been collected by Jacoby, *FGrH* #687 (Dionysius of Miletus), 687a (Hellanicus), and 687b (Charon), There are four fragments of Dionysius, eleven of Hellanicus and six of Charon. They are admirably discussed by Drews, 1973, 20-32 with full references to the earlier literature.

106 The fragments have been collected by Page, 1981, 194-238 with full discussion; the authenticity of many is questionable; see also Molyneux, 1992, 147-196 and Kierdorf, 1966, 16-29.

are told that the Spartans faced 300 myriads of men there. Aeschylus' *Persae* was staged at Athens in 472 B.C. and, as previously noted, he gives the size of the Persian fleet as 1207 ships (341-343) and speaks of "rowers in multitude past all numbering" (39-40) and, as also previously noted, he refers to the kings Eye as the counter of tens of tens of thousands (980) and several times says that the king's army included the whole of Asia[107].

Both Simonides and Aeschylus, like Herodotus, had an exaggerated notion of the size of Xerxes' forces, but is this exaggeration based on a desire to inflate the size of the Persian army and navy in order to amplify the Greek victory? Or is it based upon the best information then available, information derived ultimately from the Persians themselves, who deliberately inflated the size of their army and navy to frighten the Greeks into submission? No definitive answer can be given, of course, and while little more can be said about Simonides, there are clear indications in the *Persae* that Aeschylus was more than passingly familiar with some of the major themes of Persian imperial propaganda. Once the king is said to be the ruler of Asia (72-74), and once he is said to be the ruler of the whole of Asia (58-60), and on another occasion is said to rule over the whole of Asia by grace of god. (762-764). Three times the divine like qualities of the king are mentioned[108], and Darius is said to have had the favor of the gods (163-164), while Xerxes is said to have had divine assistance in bridging the Hellespont (722-723). It may also be significant that Aeschylus was familiar with some of the titles by which Persian kings were known. Once the monarch is called the Great King (24)[109], and on another occasion he is referred to as δέσποτα δεσπότου (665-666), which is perhaps best translated here as king of kings[110]. Since these general themes of Persian imperial propaganda

[107] Aeschylus, *Persae,* 12-13; 55-57; 268-271; 548-549; 718; frequently he speaks of the vast army or navy and the numerous casualties: see 25; 38-40; 342-344; 533-534; 898-903; 925-926; 979-981; 1029; generally see Kierdorf, 1966, 64-82.

[108] The pertinent passages are 80; 654-656; and 856-858 and they are perceptively discussed by. Badian, 1994, especially pp. 15-16 who also notes that at lines 156-158 Atossa is referred to as the wife and mother of a god, but he thinks this is flattery of the queen and should not be taken literally.

[109] Herodotus refers to the great king four times, at 1.188; 1.192; 5.49 and 8.140; on the lengthy history of this title in the ancient Near East see Artzi & Malmat, 1993, 28-38.

[110] This is the translation preferred by Schmitt, 1978, 19-20, although the normal rendering in Greek would be βασιλεὺς βασιλέωv. Frye, 1964, 36-54 discusses the lengthy history of the title king of kings in the ancient Near East while Griffiths, 1953, 145-154 discusses its use by the Greeks. If the letter from Darius to Gadatas (Meiggs & Lewis,

were known to Aeschylus and made their way into his work, we should not be surprised if specific provisions of the propaganda of the moment, namely, the amplified size of Xerxes' forces, did so as well.

It is not likely that either Simonides, Aeschylus or Herodotus recognized that he was repeating Persian propaganda, for nothing in their experience could have prepared them for it. This must have been the first time in their history that the Greeks were exposed to such a sophisticated and systematic barrage of enemy propaganda. Polybius may be over stating when he says that early on in their history the Greeks "would not even consent to get the better of their enemies by fraud…,"[111] but at this point in their development there is nothing comparable in Greece to the Behistun inscription or the Cyrus cylinder and the Greeks did not have a history of psychological warfare and propaganda literally thousands of years in the making. As Herodotus remarks on Xerxes' canal across the isthmus at Athos suggest[112], he was well aware that the king sometimes did things primarily for their psychological impact on the enemy and he recognized several deliberate uses of misinformation, by the Xerxes himself in an effort to conceal Persian losses from his own men at Thermopylae (8.24-25), and also by the Persian commander Artabazus (9.89). But he can be excused for not perceiving just how important propaganda and misinformation were in the Persian arsenal of weapons.

It may well be the case that Aeschylus, Simonides and Herodotus did exaggerate the size of Xerxes' forces but the original embellishment, surely, began with the Persians themselves. Knowing what we know about them we can be as certain as we can of anything in antiquity that from the outset they deliberately, and successfully, sought to mislead the Greeks in to believing that their forces were much larger than they actually were. Anything less would have been wholly out of character, and they should be given their due for reminding us once again of that old maxim — the first casualty of war is truth.

1988, 20-22, #12), is really genuine, that would be the first use of the title in Greek. On the nature of the Persian monarchy in Aeschylus see Tourraix, 1984, 123-134.

[111] Polybius 13.3.2-6; Pritchett, 1975, 156-176 has collected the evidence for surprise attacks in Greek warfare.

[112] Herodotus, 7.24 believed that the ships could easily have been hauled overland the attributes Xerxes' desire to dig the canal to his μεγαλοφροσύνης, "because he would display his power and leave memorials of it." Many years later Plato, *Laws,* 699a-c maintained that the bridging of the Hellespont and the digging of the canal had a powerful psychological impact on the Athenians.

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AGAIN ON TANG-I SARVAK II, NE-SIDE. GODDESSES DO NOT HAVE MOUSTACHES AND DO NOT WEAR TROUSERS

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In 1975 the late Prof. Louis Vanden Berghe, Mr. Erik Smekens, photographer-draftsman at Ghent University, and myself spend some three months travelling in Iran in order to visit almost all rockcarvings known at that time. At Tang-i Sarvak we did camp four days, and made as many illustrations (6x6 B&W; 24x36 and 6x6 colour slides), measurements and observations as possible. To our equipment did belong a foldable ladder, which enabled us to get closer to some details. Later on, back at our University, drawings of the rockcarvings were made, with the aid of and by reviewing the numerous illustrations, taken at different angles and with different lighting, during our fantastic and memorable trip.

In fall 1983 an exhibition was held at the Royal Museums for Art and History at Brussels with large photographic panels (Vanden Berghe *e.a.*, 1983), illustrating all reliefs which had been studied by us a couple of years before. The same exhibition took equally place in the "Grazer Stadtmuseum" (Vanden Berghe, 1985). Also, in 1985, L. Vanden Berghe & K. Schippmann published together the book "Les reliefs rupestres d'Elymaïde (Iran) de l'époque parthe" as Iranica Antiqua Supplement III, Gent, in which all Elymaean rockcarvings were fully reviewed. However, no attempt has been made to provide a renewed study of the inscriptions which occasionally do occur on these monuments.

Two years later Trudy Kawami published her book "Monumental Art of the Parthian period in Iran" (= Acta Iranica vol. 26. Textes et Mémoires vol. XIII, Leiden, 1987), but seemingly the Brussels Exhibition Catalogue of 1983 and Vanden Berghe's & Schippmann's book of 1985 were unknown to her. Concerning Elymaean rockcarvings, and particularly Tang-i Sarvak, Hans Erik Mathiesen published an article on that site in 1986; in 1992 his study "Sculpture in the Parthian Empire", was published

by Aarhus University Press. Meanwhile, the Iranian scholar J. Mehr Kian (1997, 1999, 2000, 2001 and Sarkosh Curtis & Simpson, 1997) continued research in the Bakhtiari area and discovered more rockcarvings, which provide additional information on Elymaean iconography. Even more recently, Hubertus von Gall (2000), published an elaborate article on the four blocks with sculptured faces from Tang-i Sarvak. He has visited the site on several occasions in 1970, 1979, 1996 and even more recently in 1999.

With this note it is certainly not our intention to come back on the numerous problems concerning the interpretation of the Tang-i Sarvak site. Only do we want to draw attention to some minor, but nonetheless important details. Our observations deal particularly with the NE-side of Block II (Pl. 2-4). On this side, figure two inscriptions (Pl. 6 & 7), a small panel with three standing figures (Pl. 2) and a larger panel (H.: 2.15m.; L.: 4m.) (Pl. 2, 3), with a person reclining on a decorated couch (Pl. 13), and behind him a person holding a cornucopia (Pl. 14-15). A similar figure holding a horn of abundance is probably also represented at Kuh-i Tina (Vanden Berghe *e.a.*, 1983, p. 51, fig. 6; Vanden Berghe & Schippmann, 1985, p. 54), but certainly does occur at Masdjid-i Soleiman and Bard-i Neshandeh (Ghirshman, 1976, pl. XXXVII, nº 1-4, pl. LXXIX, nº 2 & 3, pl. 13, 22 & 32). In front of the reclining person sit two persons (each 2 m. high) (Pl. 8-9). The one closest to the klinè wears a kind of helmet (with a tail on top?) with a downward turned brim (Pl. 11) and the other one, on the left side of the panel, from the point of view of the visitor, has a radiating halo ending in small balls on top of his head, as a kind of crown (Pl. 10). The helmeted figure holds a spear, with the point upright, while the haloed person holds a staff ending on top in a ball.

The rockcarvings at Tang-i Sarvak, like many others, have seriously been damaged, not only through natural causes, but in the course of centuries they suffered also of human destructive power. Rockcarvings are still sometimes lapidated by passing nomads as an act of superstition to counter evil spirits (Mehr Kian, 2000, p. 62). Smaller stones which have been thrown are usually to be found in front, below the sculptures. The sculpted rock surface is mostly very pitted and most human faces have been largely obliterated for religious reasons. This bad condition of the stone gives of course rise to numerous problems in the interpretation of the different figures.

In general, the rock carvings at Tang-i Sarvak are dated between 1st. c. to 3rd. c. A.D. (e.g. Vanden Berghe & Schippmann, 1985, pp. 84-86; Kawami,

1987, pp. 88-110; Mathiesen, 1992, pp. 34-35; see also Vardanian, 1997). The scene depicted on the NE-side has been differently interpreted. Usually the panel is seen as the representation of an investiture scene of king/prince Orodes (Vorod). Depending on the interpretation of different scholars, he is showing, receiving or giving a ring of investiture. Sometimes it is seen as a secular ceremonial act; others think it is to be situated in the religious-sacral sphere as Orodes/Vorod receiving his insignia of power from the gods or as an *Hieros Gamos* with legitimating ritual (on the different interpretations, see Vanden Berghe & Schippmann, 1985, pp. 68-70; Kawami, 1987, pp. 88-110; Mathiesen, 1992, pp. 130-146, von Gall, 2000, pp. 343-344).

The two seated persons on the NE-side of Block II at Tang-i Sarvak have been differently identified as vassals, warriors but most often as deities.

Tab.: Main identifications of the two seated figures on the NE-side at Tang-i Sarvak II

author	year	page	with radiating halo	with helmet
Rostovtzef	1935	171 sq.	local sun god	unnamed local god
Stein	1940	106	male figure	male figure
Debevoise	1942	101	military god	military god
Henning	1952	156	warrior	warrior
Altheim-Stiehl	1957	92	warrior	warrior
Ghirshman	1962	54	vassal	vassal
Colledge	1967	170, 234	vassal	vassal
Seyrig	1970	115-116	Mithra-Helios	Anahita-Athena
von Gall	1971	211 sq.	Artemis	Athena
Dentzer	1971	41	sun god	Athena
De Waele	1974	259	Artemis	Athena
Ghirshman	1975	126	Mithra	Anahita
Ghirshman	1976	194	Mithra	Anahita
Azarpay	1976	538	Nana/Nanaia	-
Colledge	1977	92	local deity	local deity
Frye	1978	206	Artemis	female
Vanden Berghe e.a.	1983	124	vassal	vassal
Hansman	1985	246	Shamash	Ishtar
Vanden Berghe e.a.	1985	70-72	vassal or warrior	vassal or warrior
Goldman	1985	299	Artemis	Athena
Kawami	1985	98, 102, 198	Mithra	Athena
Colledge	1986	30	Mithra	Anahita
Mathiesen	1986	160	sun god	war god
von Gall	1990	103, 104	Artemis	Athena
Mathiesen	1992	135	sun god	war god
von Gall	2000	325, 343	Artemis-Nanaia	Athena

Sometimes they are interpreted as two female persons, as a male and female or as two males. The figure with the radiating halo is most often seen as Artemis or Mithra-Helios and the figure with the helmet as Athena-Anahita (see table). With this note, it is our aim to demonstrate that at least the person with the radiating halo is certainly a male. The photograph with a detail of his head (Pl. 10), we assume, is convincing enough to accept this observation as rather conclusive.

In 1983, L. Vanden Berghe *e.a.,* p. 123 and in 1985, L. Vanden Berghe & K. Schippmann, p. 67, identified the two figures as being male. In the text of 1983 is said: "Il s'agit inconstestablement de deux hommes (ils ont une moustache)"; in the 1985 publication is stated: "Les visages sont trop altérés pour en lire les details. Des barbes s'y observent néanmoins et une large moustache pare le visage à l'extrême gauche."

On the drawing made by Mr. Erik Smekens (see Vanden Berghe & Schippmann, 1985, p. 69, fig. 9), both figures received the outlines of a moustache, but he did not go as far as to give them a beard. We reproduce here two details of both figures, and I assume that many readers will be convinced that the one with the so-called halo (Pl. 10), has indeed a clearly visible moustache. For the second one, I would personally equally opt for a moustache. Though, I realise that this might be less convincing on the photograph (Pl. 11). What could be interpreted as a moustache could eventually be due to a fracture in the rock surface or as an optical illusion, particularly as far as the left side (the right part for the viewer) of his face is concerned.

As to the presence of a beard on both figures, I tend, together with Erik Smekens, to be more prudent. Both figures have a rather rectangular face which could allow a short squarish cut beard, but this was certainly not clear to us during our observations at the site. Here again the chin-part of the helmeted figure could be interpreted as a beard, but with the necessary precaution I think we have to leave this open to further observations.

However, H. von Gall is not convinced at all that both seated figures are male, on the contrary. In an article published in 1990, p. 112 note 33, H. von Gall states that "This was my original interpretation (s. AMI, Neue Folge, 4, 1971, pp. 211 ff.) contested by L. Vanden Berghe, *Les reliefs rupestres d'Elymaïde (Iran) de l'époque parthe* (=*IrAnt*, suppl. III, 1985) pp. 69 ff. fig. 9 with the argument of alleged moustaches on the two seated figures to the left, according to which these figures should be either vassals or warriors.

But Vanden Berghe's own photographs, op. cit. pls. 32, 33 do show clearly that the destruction of the faces has already reached the hollows of the eyes. Now, if moustaches belong, after the nose, to the most prominent parts of a human face, rests of them can hardly have remained. I think, that we have to do it with lines of fracture, emphasizing, that on Parthian coins with heads seen frontally the points of the moustaches never surpass the contour of the face (as they do on fig. 9 *op. cit.*). Artemis (though not with a radiated crown) and Athena are also represented on a small bronze plaque from Masged-e Soleiman, s. Ghirshman o.a., *Terrasses sacrées de Bard-e Néchandeh et Masjid-i Solaiman* (=Mémoires de la Délégation Archéologique en Iran XLV, 1976) II, pl. XCVII, 1 and p. 58: G.M.I.S. 301)".

We would like to add here that the argument that on Parthian coins with frontal heads the points of the moustaches never surpass the contour of the face, can indeed be advanced, but on the other hand we see no reason to accept this as a reality. What is not present on other objects is not necessarily a valuable reason to believe that it does not exist elsewhere (other comparable examples are probably attested at Bard-i Neshandeh: Ghirshman, 1976, Pl. 7 nº 80 & 77; Pl. 10 nº 152). There have been already so many other surprises in archaeology.

How it may be, Hubertus von Gall presented in his Abb. 6 on p. 326 (AMIT 2000), a drawing with the caption "Zeichnung Verf. nach Vanden Berghe/Schippmann 1985". On this drawing he made some alterations to Smekens' original drawing: particularly the decoration on top of the middle bird of the couch decoration, compare to Vanden Berghe & Schippmann, 1985, p. 158, pl. 34; the throne legs of the couch of both seated figures, but more importantly he omitted the moustaches of both figures, and omitted also the downward turned brim of the helmet of the seated figure with spear, closest to the klinè (compare Pl. 4 & 5).

We are convinced that the figure with the halo is not a female and thus certainly not Artemis, as von Gall suggests. I think that the moustache is clearly to be seen on the photographs and that he is thus a male. Whether he is a warrior, vassal or a sungod is left open due to lack of enough evidence. The person with the helmet might be male although this is, as far as we are concerned, not fully proven. The stone of the rock surface is too damaged and deteriorated to be fully sure about that. It might be advanced that he is indeed a male, in analogy with the haloed figure. It would be quite strange — although certainly not to be excluded — that both figures, if of different sex, would be represented in the same way.

Hubertus von Gall (2000, p. 325) has also a different view on the dress of the two seated persons. He describes them as "….zwei weibliche Figuren …Beide tragen ein bis auf die Knöchel reichendes gürtelloses Gewand, durch das sich die Schienbeine stark durchdrüchen". As far as we are concerned, we believe that both seated figures, with the legs in a three-quarter pose, do wear trousers and a long cloak, as usual in Elymaean art (see also Kawami, 1987, pp. 197-198). If females, this would be the only instance in pre-Islamic Iranian art of woman being shown with trousers (see illustrations in Daems, 2001). By way of comparison we could draw attention to the fact that both seated figures are represented in the same way as the second seated figure, starting from right on the upper register of Block II, NW-face (Vanden Berghe & Schippmann, 1985, p. 76, fig. 11 and p. 166, pl. 42; Mathiesen, 1992, pp. 143-144, fig. 26; von Gall, 2000, p. 333, Abb. 13). We think there is no doubt that this figure can be identified as a male. Also, the trousers of the man reclining on the klinè on Tang-i Sarvak II, NE-side (Pl. 13) are shown in the same way. In this respect it might also be interesting to present some pictures of a local Bakhtiari, from the area of Lali (Pl. 16-17). He is wearing his traditional large trousers — quite similar to the Elymaean ones — and this shows how the Elymaean sculptor had different possibilities to represent trousers, depending on how he viewed the person to be depicted. Of course, one should imagine a cloak over it, as the Bakhtiari often do wear (Digard, e.a., 1998, pl. IA, IIA, IIIA,VB, VIIIB).

One could argue that the statements we are bringing forward as arguments or proofs are as weak as von Gall's numismatic evidence. Nonetheless, we would also like to point to a male rider holding a spear and with an identical or related helmet on the rockcarving of Hung-i Yar-i Kamalvand, in the Izeh-Malamir area (Vanden Berghe & Schippmann, 1985, pp. 42-45, fig. 3, pl. 8-10). Though, it must be added that a female with helmet and spear figures on a bronze plaque from Masjid-i Soleiman (Ghirshman, 1976, pl. XCVII).

The sole solution maybe to solve the problem of the differing opinions of H. von Gall versus Erik Smekens and myself, might only be a renewed visit to the site. We are convinced that the haloed person is male, as most likely so is the helmeted person. The scholar who goes to Tang-i Sarvak in future should once again have a close look at the two seated figures, but

he/she should not forget to take along a light weight, long extendible ladder of some 7 m. However, 5 m. might be sufficient since the rockcarving is leaning forward. The person who thinks it is worth to do the journey, will certainly bring a major contribution to the solution of an important problem which largely depends particularly on one detail, namely on the presence or absence of "moustaches". We are fully convinced already of their presence.

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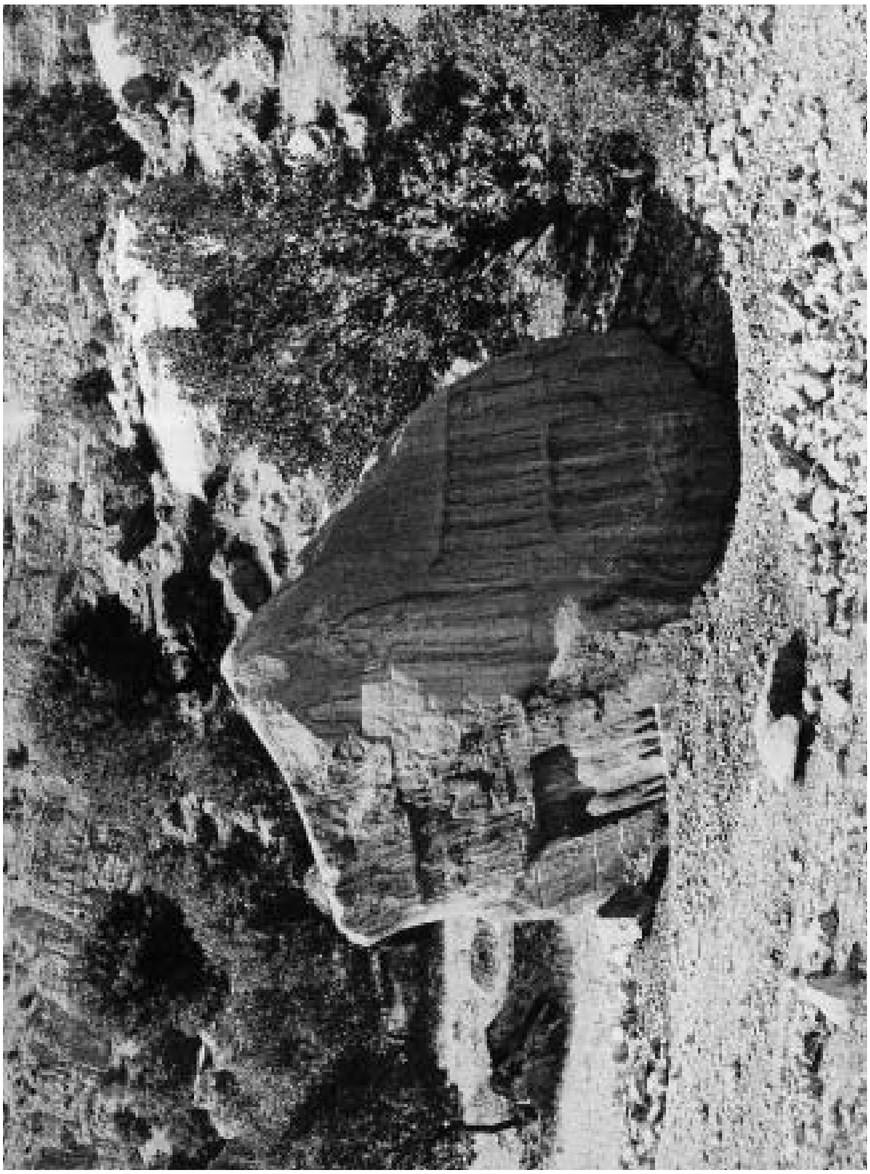
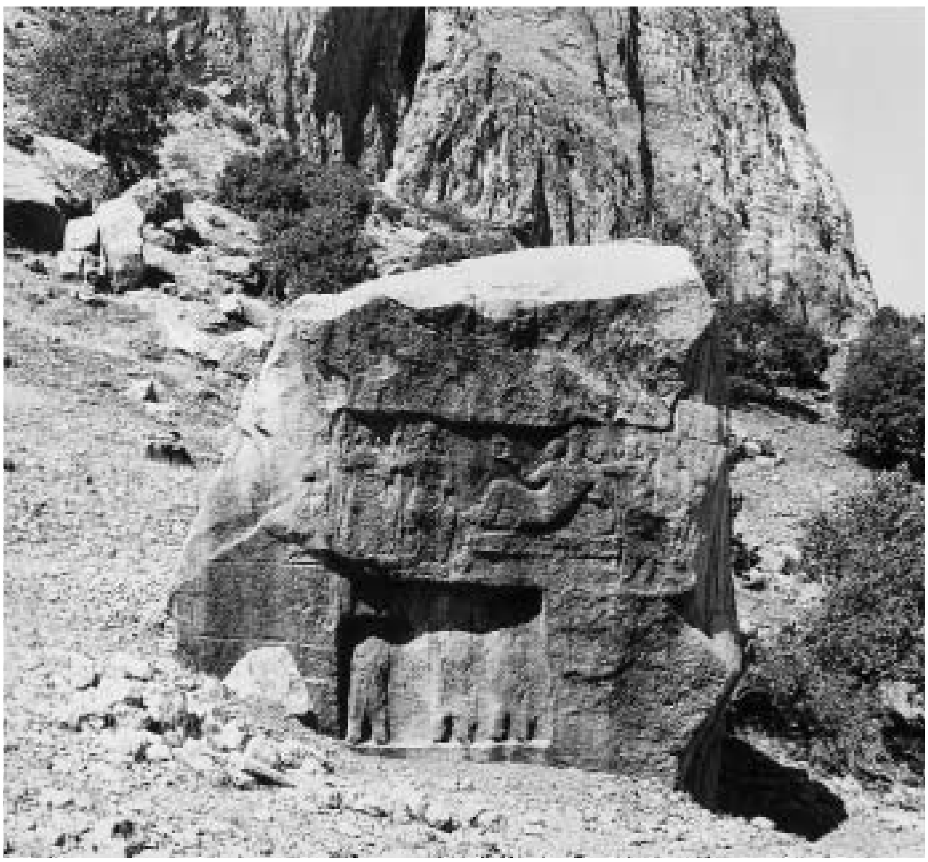
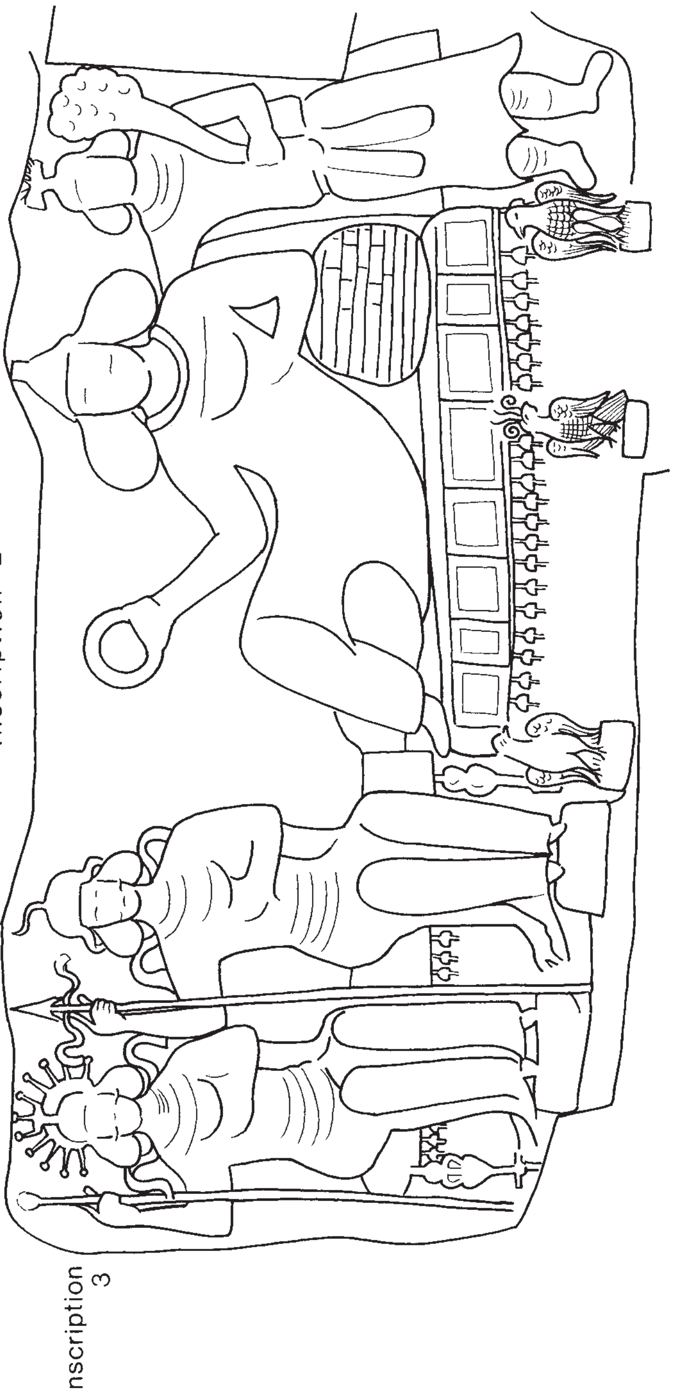


Pl. 1. General view of Tang-i Sarvak II (Photo Erik Smekens, 1975).

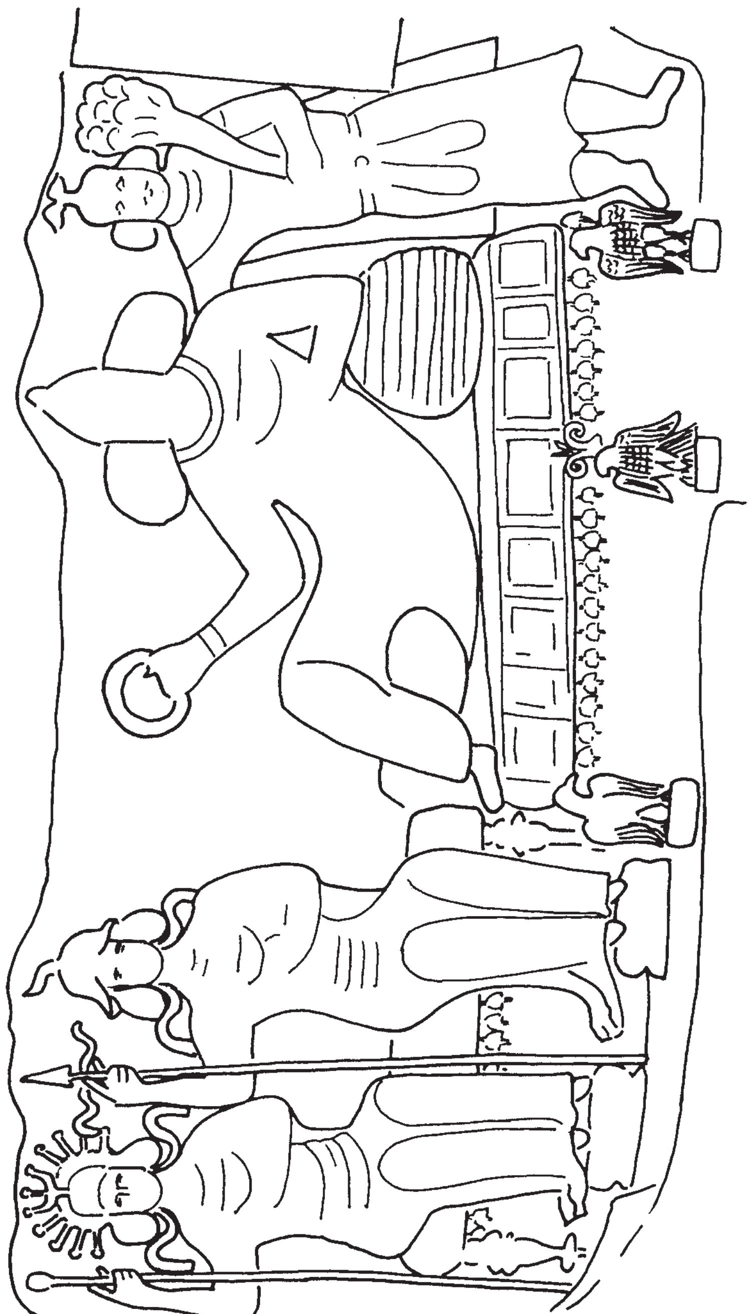


Pl. 2. View of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

Pl. 3. View of main panel at Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).



Pl. 4. Drawing by Erik Smekens, 1975 *in* Vanden Berghe & Schippmann, 1985, p. 69, fig. 9.



Pl. 5. Drawing pl. 4, altered by Hubertus von Gall, 2000, p. 326, Abb. 6.

Pl. 6. Inscription above main panel at Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975)
(=Henning, 1952, p. 169 sq.: inscription 1).

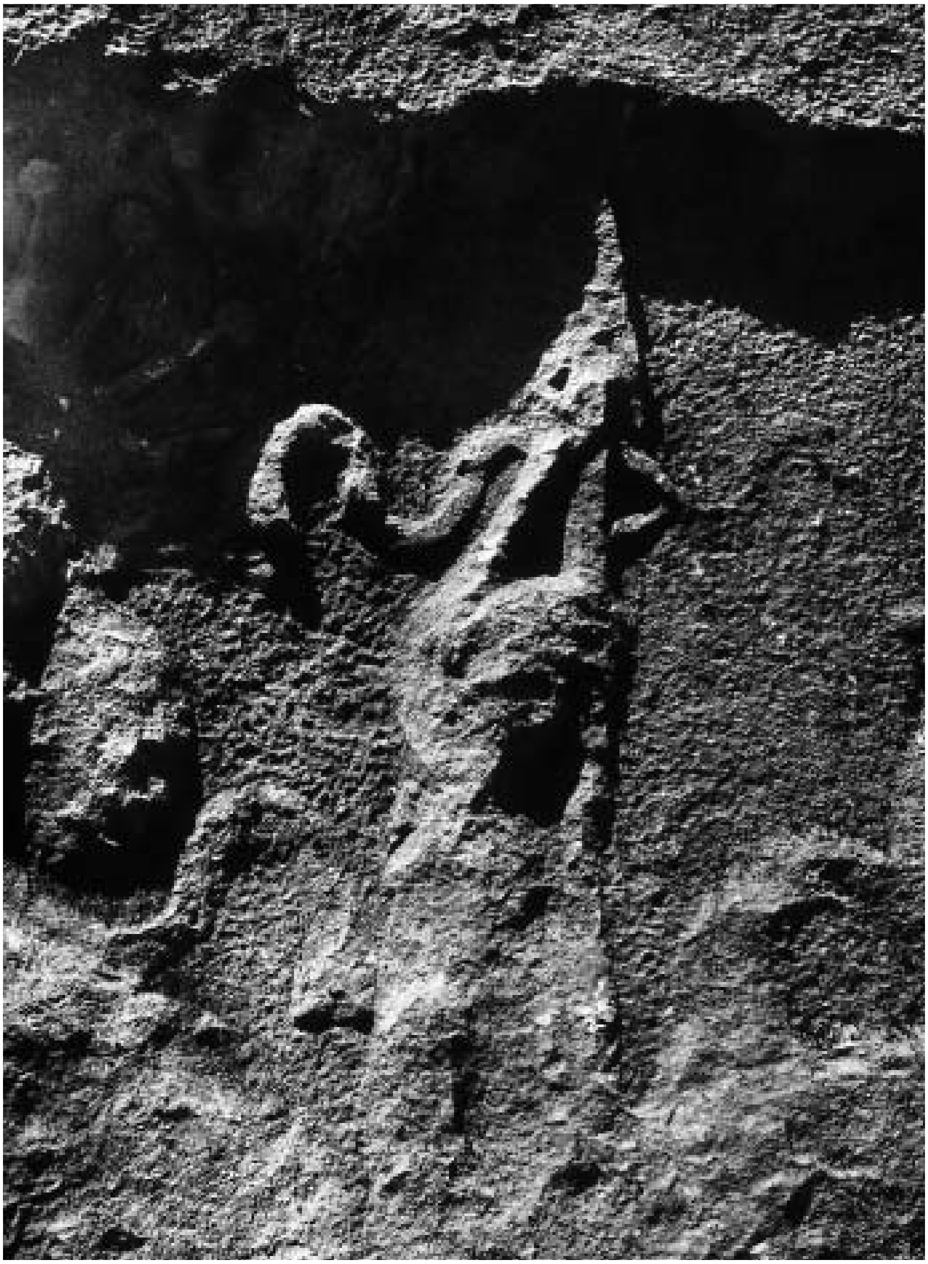
Pl. 7. Inscription on left side of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975) (= Henning, 1952, p. 174 sq.: inscription 4).

Pl. 8. Two seated figures on the left side of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

Pl. 9. Two seated figures on the left side of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

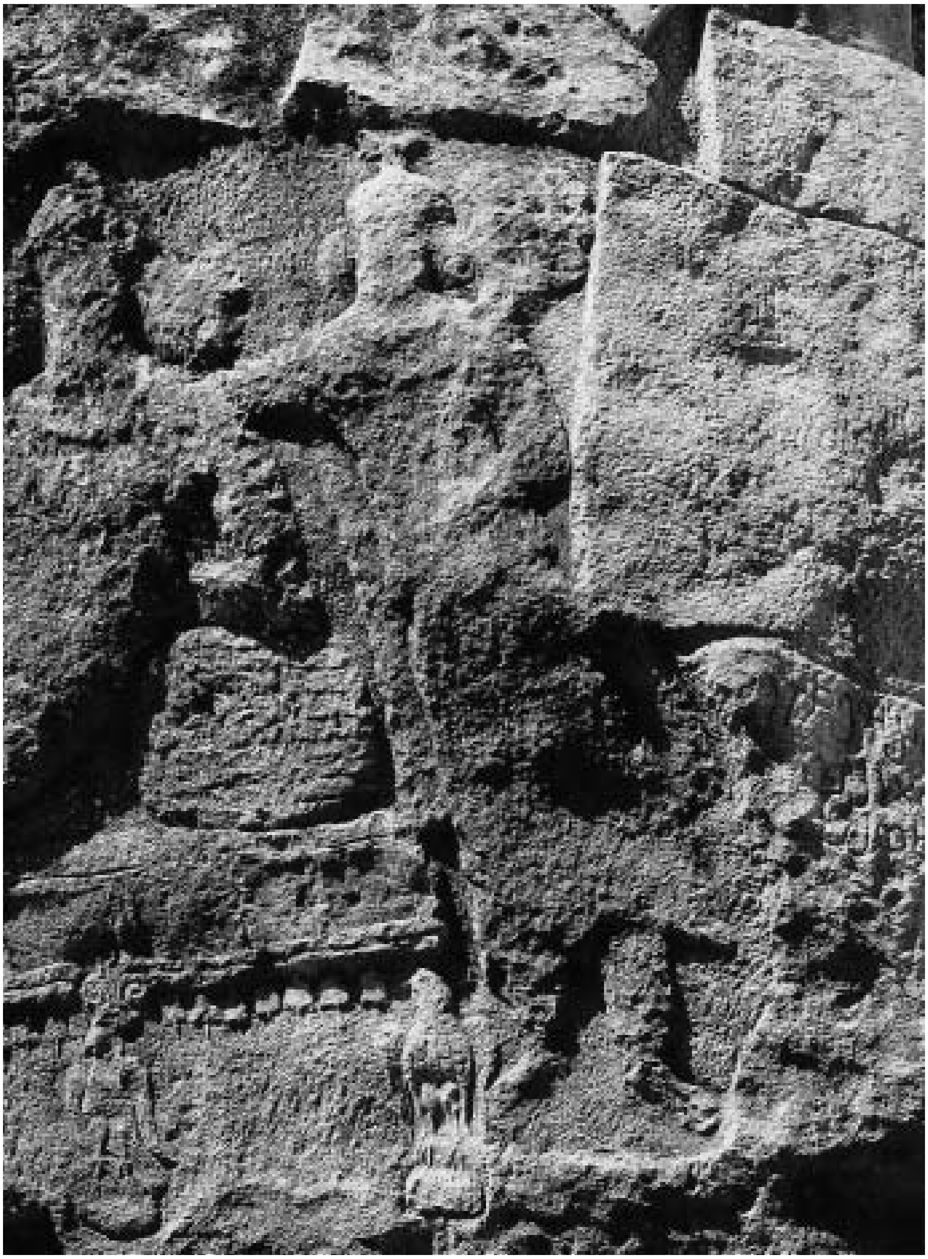
Pl. 10. Detail of seated figure on the left side of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

Pl. 11. Detail of seated figure to the left side of the klinè on Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).



Pl. 12. Detail of spear and hand of seated figure to the left side of the klinè on Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

Pl. 13. Figure reclining on klinè at Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).



Pl. 14. Figure with cornucopia to the right side of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

Pl. 15. Detail of figure with cornucopia to the right side of Tang-i Sarvak II, NE-side (Photo Erik Smekens, 1975).

Pl. 16. Standing Bakhtiari man, in the vicinity of Lali (photos Erik Smekens, 1975).

Pl. 17. Seated Bakhtiari man, in the vicinity of Lali (photos Erik Smekens, 1975).

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FURTHER THOUGHTS ABOUT PARTHIAN AND RELATED BELT AND BELT PLAQUES

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In the article by Vesta Sarkhosh Curtis on Parthian belts and belt plaques, recently published in *Iranica Antiqua* (Curtis 2001) there was first published as Parthian buckle a recent acquisition of the British Museum. It is a bronze clap, showing an Aphrodite on a he-goat (Curtis 2001, 306, 327, pl. XIV, a; British Museum, ANE 1995-9-30,1). The subject shown on the buckle was considered by V.S. Curtis (2001, 306) as "a female figure, probably a goddess, riding on a bull".

Defining the buckle as Parthian, V.S. Curtis probably did not know that the buckle belongs to a rather rare type, showing Aphrodite Pandemos. This is the eighth known buckle of this type and all the pieces with known provenance come from the North Pontic area, primarily from the Eastern Crimea, including Pantikapaion and Nymphaion (4) and Chersonesos (1) (Bilimovich 1962, 43-45, figs. 1-5; Treister 1996, 121, fig. 37; one more piece is now on sale at the Internet auction "Ancienttouch", www.ancienttouch.com/362.jpg). All the known buckles repeat the same composition with slight variations, thus, it was suggested that they go back to one and the same model (Bilimovich 1962, 45). Nevertheless, the figures of Aphrodite and he-goat vary in details. The lower bar of the frame is decorated either with a horizontal engraved line, as on the buckle from Nymphaion (Fig. 1) (Bilimovich 1962, 44, fig. 1; Hermitage, inv. N.F.1949.661), or with dots, as on the buckles from Pantikapaion (Bilimovich 1962, 44, fig. 2; *Antichnye gosudarstva* 1984, 346, pl. CLV, 3; Hermitage, inv. P. 1875.43), Chersonesos (*CR St Petersburg* 1893, 60, fig. Bilimovich 1962, 44, fig. 3; Hermitage, inv. Kh.1893.68), and British Museum (Curtis 2001, 306, 327, pl. XIV, a), or with dot and notched pattern, as on the buckle of unknown provenance in the Hermitage (Bilimovich 1962, 44, fig. 5) and on the buckle from the Asliyan collection in Moscow (Fig. 2) (Treister 1996, 121, fig. 37), or with herring-bone pattern as on the buckle from Pantikapaion (Bilimovich 1962, 44, fig. 4). Also the number of loops

below the frame varies: there are either two, as on the buckles from Pantikapaion (Bilimovich 1962, 44, figs. 2-3), of unknown provenance, now in the Hermitage (Bilimovich 1962, 44, fig. 5) and from the Asliyan collection (Fig. 1) (Treister 1996, 121, fig. 37), or one, as on the buckle from Chersonesos (Bilimovich 1962, 44, fig. 3) and the piece now in the British Museum (Curtis 2001, 306, 327, pl. XIV, a). On the buckle from Nymphaion (Fig. 1) (Bilimovich 1962, 44, fig. 1) there are no loops at all. The recently published buckle, now in the British Museum finds the closest parallels among the buckles from Nymphaion (the figure of Aphrodite) (Bilimovich 1962, 44, fig. 1), and Chersonesos (decoration of the frame and the single loop) (Bilimovich 1962, fig. 3).

The finds, which originate from known archaeological contexts may be dated in frames of the 2nd-3rd centuries AD, as the buckle from Nymphaion (Fig. 1) (Bilimovich 1962, 43-44, fig. 1) or even more precise to the second half of the 2nd-early 3rd century AD, as the piece from the burial excavated in Kerch in 1875 in tomb No. 6 near the Long Rock (*CR St Petersburg* 1875, XXXVIII; Bilimovich 1962, 44, fig. 2), found together with glass *balsamaria* and jug.

Although the general scheme of the buckle — rectangular frame with a hook, open-worked motif — corresponds to that of the Parthian buckles (see, *e.g.*, Post 1995; Curtis 2001, 306, 325-326, pls. XII-XIII), the absence of the studs, which always appear on the Parthian buckles – on the opposite side to that with the hook – speaks in favour of a different way of fixation of buckles to the belt. Also the loops along the lower edge of the frame, which we never find on the Parthian buckles seem to be a characteristic feature of this series. The compact distribution of similar buckles with the motif, which we do not have on the buckles found within the Parthian empire, strongly suggest local North Pontic, most probably Bosporan origin.

This suggestion is further confirmed by existence of a series of bronze buckles with side hook and open-worked image of a lion in a frame, some having a loop below the frame, as the piece from tomb No. 25 excavated in Kerch in 1884 (Hermitage, inv. P. 1884. 16). The necropolis of Pantikapaion yielded two other buckles of this type (Hermitage, inv. P.1874.120 and P.1915.1; see also *CR St Petersburg* 1913-15, 102; Bilimovich 1962, 45, note 10; similar buckles from Kerch and of unknown provenance are kept in the Historical Museum, Moscow, inv. 5278; 78607, see: *Cat. Moscow* 2002, n° 325-326), the frame of the first of them is decorated with an incised herringbone pattern reminiscent of that decorating the frame of the buckle with

Aphrodite Pandemos from Kerch, now in Pushkin Museum, Moscow (Bilimovich 1962, 44, fig. 4; inv. II 868). To this may be added buckles of similar construction with different motifs, including the one showing a group of a lion attacking a boar said to have come from Kerch and acquired by the Metropolitan Museum in 1898 (Richter 1915, 331, 333, 335, No. 1094, inv. G.R.342), a piece from Taman in Berlin, showing a sphinx (von Mercklin 1928, 453) and the only one buckle of this type reportedly found outside the North Pontic area, in Ephesos, now in Hamburg, representing also a sphinx (Museum für Kunst und Gewerbe, inv. 1926, 246: von Mercklin 1928, 453, No. 138, fig. 164). Given its inventory number the buckle from "Ephesos" may well originate from South Russia – the next inventory numbers 1926, 247-252 – are the open-worked buckles and belt endings from the area of Olbia (von Mercklin 1928, 453-455, No. 139, fig. 165), which belong to the type with tamgas, spread mainly in the Bosporan Kingdom in the second half of the 2nd century AD (Treister 2001b, 363-373; see also *Cat. Moscow* 2002, n° 327).

The form of a circular, or figure-of-eight-shaped buckles with a side hook was developed in the Sarmatian culture already in the 3rd-2nd centuries BC (Moshkova 1960, 293 ff.; *Nomads* 1995, 129, fig. 29, a-b). In the Late-Hellenistic period some of the figure-of eight buckles with side hooks are additionally decorated with theatrical mascs or human figures, like the finds from Neapolis in the Crimea (Moshkova 1960, 299; Maskimova 1961, 140, fig. 56, 2; Dashevskaya 1991, 118, pl. 62, 24) or from the Artyukhov barrow (Moshkova 1960, 299; Maksimova 1961, 139-141, fig. 56, 1; 1979, 87-88, No. 17, fig. 30; Hermitage, inv. Art. 98), suggesting the adoption of the Sarmatian type of buckle in the North Pontic area (Treister 1992, 107, note 178). In the first centuries buckles in shape of simple or double circles or having a zoomorphic shape with side hooks were wide-spread in the Late Scythian culture in the Crimea (see, *e.g.*, the finds from Neapolis: Symanovich 1983, 95-96, pl. 39; Dashevskaya 1991, 118-119, pls. 62, 21, 22; 63, 1-5). It is worth to note that among the early Sarmatian buckles there were also those having a rectangular frame with open-worked motif inside (see, *e.g.*, camels on the buckles: from Vesely in the Manych basin: Smirnov 1976, 82, 86, fig. 6, 13; *Stepi* 1989, 371, pl. 66, No. 48; *Nomads* 1995, 129, fig. 29, e; from Donskoi, Rostov-on-Don region: *Cat. Paris* 2001, No. 133).

This is not an aim of my note to reject the existence of Parthian imports in the North Pontic area, dating to the 1st-early 3rd centuries AD — they are rather well represented, for instance by the finds of ivory plaques with

reliefs in Olbia (see Pharmakovsky 1907, 147-148, fig. 16; Lukonin 1967, pls. 2-4; Belin de Ballu 1972, 181, pl. LXXXII; Mathiesen 1992, 187, No. 151 with references; *Cat. Vienna* 1996, 397, No. 73 (E.Zejmal); Olbrycht 1998, 29), a dagger with an ivory handle showing a Parthian king, allegedly Vologases I (60-77 AD), found in 1989 in a Sarmatian burial No. 1 of barrow 18, near Krasnogorovka in the Lower Don basin (Treister 2001a; *Cat. Paris* 2001, No. 284), and a silver cup with Dionysiac scenes and with the dedication ΠΑΡΑ ΒΑΣΙΛΕΩϚ ΠΑΚΟΡΟΥ, supposedly Pacorus III, the brother of the Parthian king Vologases III (148-191 AD), originating from the clandestine excavations of 1934/35 near Dakhovskaya in the Kuban basin and lost during World War II (Lunin 1939, 220-223, fig. 9; Trever 1953, 242-245, fig. 35; Kropotkin 1970, 85, No. 721, fig. 81, 3; Arakelyan 1976, 84). I have mentioned elsewhere the finds of Parthian coins and their off-prints, the latter occasionally used for decoration of the diadems (Treister 2001a, 43, fig. 6). Another example is a big openworked gold pendant in shape of an amphora, decorated with granulation with pendants on chains (Greifenhagen 1970, pl. 24, 1; Berlin, Antikensammlung, inv. Misc. 11863, 138). Such pendants are usually considered as Parthian (*cf.*, *e.g.*, earrings from Seleucia on the Tigris found in Level II, dated about AD 40-120: Porada 1967, 105, pl. XXIV, 5-7; from Palestine: Davidson and Oliver 1984, 142-143, No. 193; or similar objects in the art market: *Christie's 25.04.2001*, No. 325).

There are also some objects from the North Pontic area, which like the buckles discussed above, never attracted attention of the scholars working on the Parthian costume.

In 1913 in the clandestine excavations of the Olbian necropolis on the Farm of Filippov there was found a 1st century AD Sarmatian (?) burial with a rich inventory (Fig. 3) (Pharmakowsky 1914, 254-257, figs. 78-80), most of the finds were obtained by P. Mavrogordato, then were on sale in Galerie Bachstitz in 1921-1931 and were acquired by the Walters Art Gallery in Baltimore. The finds included:

1) gold flasks (Baltimore, inv. 57.380: Pharmakowsky 1914, 254-255, fig. 29; Zahn 1921, 30, J, 34, Pl. 27; Rostowzew 1931, 586; Skalon 1961, 129-131, figs. 11, 1; 12; Shelov 1966, 296, No. 3; Belin de Ballu 1972, pl. LXXVIII, fig. 1; *Cat. Baltimore* 1979, 99, No. 286; Musche 1988, 136, No. 3.2.4.3 Pl. XXXV (right); Treister in press, No. 10 (B 3); Baltimore, inv. 57.381: Zahn 1921, 30, k, 34,

pl. 27; Skalon 1961, 129-130, fig. 11, 4; Shelov 1966, 296, No. 6; Belin de Ballu 1972, pl. LXXVIII, fig. 1; *Cat. Baltimore* 1979, 99-100, No. 287; Musche 1988, 136, No. 3.2.4.3, pl. XXXV (left); Treister in press, No. 12 [B 5]);

2) gold pendants (Baltimore, inv. 57.377-379: Pharmakowsky 1914, 254 ff., No. 3, fig. 78; Zahn 1921, 30, G, H, No. 92, pls. 26-27; *Cat. Baltimore* 1979, Nos. 288-9);
3) gold sewn plaques (Baltimore, inv. 57.387: Zahn 1921, 31, O, P, pl. 30, No. 92; *Cat. Baltimore* 1979, No. 293);
4) glass vessel (Pharmakowsky 1914, 256-257, No. 8, fig. 80);
5) gold bracelet made of thick wire widening towards the ends (Pharmakowsky 1914, 254 ff., No. 6, fig. 78).

The same burial probably yielded some other objects on sale in the Galerie Bachstitz and acquired by the Walters Art Gallery (Zahn 1921, 32-3; Rostowzew 1931, 585-586), including a pair of gold armlets decorated with gems and cloisonné (Zahn 1921, 27-28, No. 92A; pl. 24, left (inv. 57.376), right (inv. 57.375); Pfeiler-Lippitz 1972, 109-110, pl. 33, 1; *Cat. Baltimore* 1979, 94 f., No. 283; Deppert-Lippitz 1985, 292, 295, fig. 224 (inv. 57.375); Reeder 1988, 234-5, No. 131.1 (inv. 57.375), 131.2 (inv. 57.376); Treister 2002, 17-68).

Among the inventory of this burial there was a buckle (Figs. 3-4) (Baltimore, inv. 57.373: Pharmakowsky 1914, 254 ff., No. 5, fig. 78; Zahn 1921, 31, L, 35, pl. 28, No. 92; *Cat. Baltimore* 1979, 102-103, No. 296) and a gold open-worked belt terminal made of a beaded wire (Figs. 3, 5) (Baltimore, inv. 57.374: Pharmakowsky 1914, 254 ff., No. 4, fig. 78; Zahn 1921, 31, M, 35, pl. 28, No. 92; *Cat. Baltimore* 1979, No. 297).

The gold buckle (ht. 3.6 cm, l. 6.6 cm) has a flange on three sides ornamented with beading and an egg-and-dart pattern. A slot and knob on the remaining vertical side must have engaged part of the belt allowing it to be cinched and fastened. R. Zahn noticed traces of leather or cloth on the back. Boldly represented in repoussé relief with details added by engraving is a griffin in profile to the left (Figs. 3-4). R. Zahn (1921, 35) has compared this buckle with the buckle with hook showing a struggle of two riders originating from Kerch and usually dated to the 3rd-2nd century BC (Moscow, Historical Museum, inv.78607(5141): Gorodtsov 1912, 19, fig. 14; Rostovtzeff 1913-15, pl. XXXV, 3; *Cat. Moscow* 1998, ill. on p. 16; von Gall 1997, 252, fig. 5; mentioned Curtis 2001, 308). To my mind the

trapezoid plaque from Kerch, which has an iron backing and gold cover and a rather long hook has typologically nothing to do with the buckle from Olbia. We can also not speak about a strong stylistic proximity. I would rather compare the image of a griffin on the Olbian buckle with those on an overlay of a rhyton found in the late 2nd-early 1st century BC Severskii barrow in the Kuban basin (Moscow, Historical Museum, inv. 9891: Smirnov 1953, 27-28, fig. 11, pl. VIa; *Cat. Moscow* 2002, n° 499).

The Olbian buckle is rather similar in shape and decoration to the buckles type 4c, according to classification of V.S. Curtis (2001, 303-304, fig. 2c). Similar profile images of griffins are shown on the belt plaques represented on the statues from Hatra in northern Mesopotamia of the time of Sanatruq II, AD 200-240. The only difference of the buckle from Olbia and those shown on the statues from Hatra is that the hook appears on the vertical, not at the rounded end of the plaque.

R. Zahn suggested that to the belt from Olbia belonged small rhomboid plaques with inlays of garnets and green glass (Baltimore, inv. 57.391: Pharmakowsky 1914, 254 ff., No. 1, fig. 78; Zahn 1921, 31, N, pl. 28, No. 92; *Cat. Baltimore* 1979, No. 292) and the Zahn's reconstruction of the belt (well argumented) was published in the auction catalogue (Figs. 4-5) (Zahn 1921, 35, pl. 28).

The belt from the 1st century AD Olbian burial excavated in 1913, as reconstructed by R. Zahn, certainly looked different from those which were in use in Hatra in the first half of the 3rd century AD (first of all it did not belong to the type of "belts made of plaques"), but a certain proximity of the shape and decoration of the buckle allows to suggest the existence of common prototypes, this may be further supported by the Eastern parallels of the armlets, supposedly found in the same burial.

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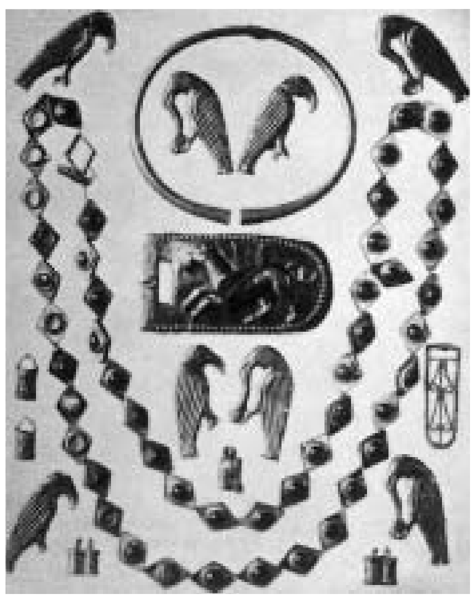

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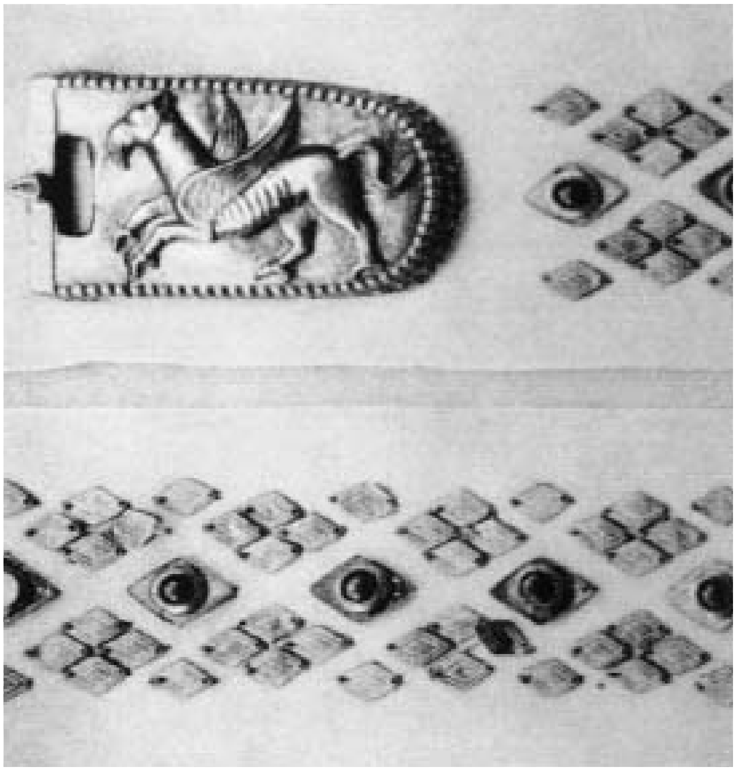
Fig. 1. Bronze buckle from Nymphaion. Hermitage, inv. N.F.1949.661. Photograph, after Bilimovich 1962, 44, fig. 1; fig. 2. Bronze buckle from Eastern Crimea. Collection G. Asliyan, Moscow. Photograph, M. Treister; fig. 3. Finds from 1913 clandestine excavations of the Olbian necropolis. Photograph, after Pharmakowsky 1914, fig. 78.



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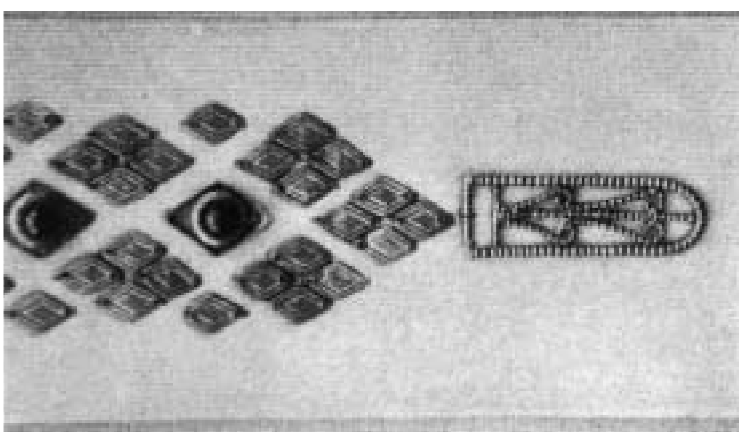

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Figs.4-5. Reconstruction of the belt from 1913 clandestine excavations of the Olbian necropolis. Photographs, after Zahn 1921, 35, pl. 28.

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COVERED TAIL AND "FLYING" TASSELS*

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«A horse does not run faster, a mounted bowman will not shoot better or farther whether the mane is crenelated or not. It is its very uselessness which makes the practice of crenelation a valuable criterion for establishing historical connections»
Otto Maenchen-Helfen,
Crenelated Mane and Scabbard Slide.

Introductory remarks

In his article, which was published more than 40 years ago, Prof. Otto Maenchen-Helfen wrote about one, at first sight not very important detail of horse decoration. Namely, about the crenelated mane[1]. Careful analysis of iconographic and archaeological material enabled him to define the territorial and chronological limits for the dissemination of these features. As a result he drew important conclusions about the directions in which cultures of nomadic origin spread[2]. I want to write about other details of horse decoration, which have also been studied in some publications[3], namely covered horse-tails and "flying" tassels.

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1 Maenchen-Helfen, 1957, pp.85-138.

2 The study of the long sword and scabbard slides for carrying them was brilliantly continued in W. Trousdale's fundamental monograph, see: Trousdale, 1975; see also: Trousdale, 1988, pp. 25-30.

3 Tanabe, 1990, pp. 51-62; Ilyasov, Rusanov, 1998, pp. 112-113, pl. XI; Ilyasov, 2001, pp. 17-30; Litvinsky, 2001, pp. 140, 143, 146, 150-152.

Covered Tails

Findings from the 1st Pazyryk Barrow revealed one characteristic feature of horse decoration, namely a manner of covering the tail of a horse with a special sheath (case), made from pieces of leather sewn together. These covers were decorated, edged at the bottom with a stripe of dark-blue coloured fur and a fringe of horse-hair[4] dyed red (pl. I: 1). Judging by the fact that covers were found on the tails of two horses, which were also decorated with horned masks and mane-sheaths, these tail-covers served not a practical, but a ritual-decorative purpose[5]. Masks, mane-sheaths and tail-covers were used to make horses "unrecognizable", to give them an unusual (frightening? fantastic?) appearance (like that of a totemic or mythological creature?)[6]. Apparently, such splendid decoration was

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[4] Griaznov, 1950, pp. 32, 40, 63, figs. 10, 16, 24: 1, 2; Rudenko, 1953, p. 227, figs. 140: a, 141. Furthermore, tails of horses were often plaited or knotted, see: Griaznov, 1950, pp. 26, 30, 32, 34, figs. 7-9, 12, 14, 15; Rudenko, 1953, p. 150, fig. 87. I have no idea, what P. Bernard and K. Abdullaev are implying, when they write that "there are many covers for horse tails in the Pazyryk complex, made from coarse material or leather and decorated sometimes with colour", see: Bernard, Abdullaev, 1997, 1, p. 82. Unfortunately they do not give any reference for the source of such information.

[5] For the decoration of horse tails with narrow copper and gold bands known from findings in the Arzhan barrow, see: Griaznov, 1980, pp. 21, 25, 32, 36, 37, 42, 44, figs. 10: 1, 12: 5, 10, 11, 20: 1. It is hard to be sure, but most likely they had only decorative significance.

[6] There existed an opinion that a horse wearing a mask with antlers embodied the image of a reindeer — one of the most ancient draught-animals, which was displaced in real life by the horse, but still retained its significant place in ideology, see: Griaznov, Golomshtok, 1933, pp. 38-41, figs. 17-18; Griaznov, 1950, p. 84. This opinion was criticized by K. Jettmar, see: Jettmar, 1952, pp. 63-66. In his turn F. Altheim suggested we should interpret the Pazyryk mask as an elk — another ancient draught-animal, see: Altheim, 1959, pp. 307-311. Yet, in the 2nd Bashadar barrow and in the 1st Tuekta barrow, which were studied by S.I. Rudenko and dated to the 6th century BC, wooden horns were found, imitating the horns of ibex (covered with silver plates and gold foil in Bashadar Barrow), see: Rudenko, 1953, p. 220; Rudenko, 1960, p. 78, pls. 38, 68-70; Zwei Gesichter, 1997, pp. 218-219, No. 111. In the course of excavations in 1998-99 by the joint Kazakh-French-Italian expedition in Berel (Eastern Kazakhstan) similar «ibex» horns were found: Samashev et al., 2000, p. 13, fig. 19. Barrow 11, in which horned masks decorated the heads of three horses, preliminarily dated to 294 BC on the basis of dendrochronology: Ibid., pp. 19, 20. As far as I know, the ibex has never been a draught-animal. On the other hand, horned horses do not exist in the natural world, though there are many images of such horses. For instance, in the Bronze age petroglyphs from Kazakhstan (Tamgaly), petroglyphs of the Sako-Parthian period from the Upper Indus region, among wooden sculptures from the burials at Ulandryk, or Yustyd in the Altai, etc. For more detail see H.-P. Francfort's section in: Francfort et al., 1997, pp. 185-198. Frequently encountered statements about the depiction

intended for special rituals and ceremonies (like funeral processions and so on) and was not used in everyday life, because it would have proved inconvenient in battle, during hunting or migration. Yet the tail-cover, which had come into being as a part of ritual decoration, but did not seem to inconvenience the rider (as, for instance, a mask with branched antlers), could have gradually evolved into a part of ordinary horse trappings (which became traditional, but not absolutely compulsory). If we paraphrase our epigraph, it can be confidently stated that the cover on a horse's tail does not affect the speed and endurance of the horse, or the fighting qualities of the horseman. Therefore, the presence of a tail-cover is an indication of some specific ideas, customs or traditions of a particular ethnic group. It is well known that various innovations in military equipment, weaponry or tactics — invented by some nation or tribe — would be fairly rapidly adopted by its neighbours. Yet, I repeat, given that the use of a tail-cover does not help to improve the fighting qualities of horse and horseman, its use, as reflected in ancient works of art, helps us to trace the

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of a horse with ibex horns found in the Issyk Barrow, seem to me to be incorrect. It is, in my opinion, a very realistic image of an ibex-*teke* (apart from the wings). This can clearly be recognized, if we compare it with golden horse-protomes, which were also found in the Issyk barrow, see: Akishev, 1978, pp. 18-19, 24, 25, 57, figs. 9, 17; Nomads of Eurasia, 1989, pp. 24-25, 28-29. Quite another matter are «ibex-horses» from petroglyphs and from Pazyryk barrows. Here we can recall the mythological draught-animals ("*vahana*" in the Hindu terminology), which are so popular in Indo-Iranian (and other) mythology. I should like to point out the «diadem» from Karghali, on which an ibex, *dzheiran* antelope (?) (mountain-ram according to E.E. Kuzmina), winged leopard (?) and dragon are represented as draught-animals. One can also see "unsaddled" winged horses, deer and bear, see: Kuzmina, 1987, p. 158; L'Uomo d'Oro, 1998, p. 225, Nos. 466-468. Draught-animals, transformed into zoomorphic thrones, survive in West Central Asia till Islamization. In wall-painting, toreutics, ossuaries and terracottas one can see horses and camels, mountain-rams and dragons, represented like *vahana*s or details of thrones: Belenizki, 1980, p. 45; Marshak, Raspopova, 1990, fig. 16; Mode, 1992, fig. 6: a-d, f, fig. 7: a, b, d, fig. 14: b, fig. 18: a-h; Kraševinnikova, 1993, 1, p. 54, fig. 6. Bronze ram-heads and ibex-shaped throne supports, found in Tajikistan, should also be mentioned: Atakhanov, 1988, pp. 156-157, figs. 1, 2; Oxus, 1989, pp. 24-26, Nos. 1, 2. Evidently, notions about *vahanas* also existed in the mythology of nomads. In these notions images of ibex and stag played an important role (we should do well to recall the crown from the Khokhlach Barrow, which is decorated with images specifically of an ibex and a stag). Horses, real draught-animals — decorated with various masks and furnished with felt and wooden horns and antlers, were only represented mythological draught-animals (stags, ibexes, gryphons) in funerary and other rituals. It was probably, not these mythological animals, but horses in ritual attire, which were depicted in petroglyphs, although one cannot rule out the possible existence of the image of the horned horse and other polymorphic animals in mythology, see: Kuzmina, 1977, pp. 104-106; Denisov, 1997, pp. 229-336.

routes of migration of an ethnic group, the directions and range of its closest contacts and its strongest influences on other nations. This is what I shall attempt to do in this article.

The unique conditions of the Altai mountains helped to preserve genuine examples of tail-covers. All other evidence pointing to the existence of this category of horse decoration is provided by works of art, made from a wide variety of different materials. Let me turn to their description.

The depiction of a tail-cover can be seen on the felt hanging from the 5th Pazyryk barrow: it covers the upper part of the plaited tail of a foal ridden by the moustached horseman riding up to the goddess[7] (pl. I: 2). The works of art chronologically and, probably, territorially closest to the Pazyryk depictions are articles from the Siberian Treasure of Peter the Great complete with depictions of tail-covers. They can be seen on the pair of gold buckles[8] with the composition known as "Riders under a tree"[9]. The upper parts of tails of pacer-horses depicted in this composition are encased in quite short covers: one tail is plaited (pl. III: 1)[10]. In my opinion, on buckles from the same collection depicting boar-hunting, a cover can be seen on the top part of the tail of the main hunter's horse (pl. II: 1, 2). The shape of the covers on the left and the right buckle is not quite the same, because the depictions on this pair of buckles do not mirror each other exactly[11]. They show a mounted archer and boar from both sides, in full accordance with nature. The horse-tail on the 4th/2nd-century BC bronze altar with a rider figure found in the Almaty (Kazakhstan) is sleek

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[7] Rudenko, 1953, pl. 95; Idem, 1960, fig. 152: j.

[8] There exist different opinions concerning the functions of these buckles, see: Rudenko, 1962, pp. 15-16; Y.A. Motov recently proposed a version of his own — "decorative-marking of a textile which was used as a ritual curtain" (Motov, 1999, p. 147). Like many other researchers (Rostovtzeff, 1933, p. 99; Artamonov, 1973, p. 128; Bunker, 1992, pp. 201-222, etc.), I think that these objects were buckles of ceremonial belts (Ilyasov, Rusanov, 1998, p. 109, pl. IX). It is very difficult to agree with some scholars (see: Fettich, 1952, pp. 253-254, 268; Nickel, 1973, p. 135; Idem, n. d., p. 152; Idem, 1996, p. 44; Alexander, 1996, p. 55), who thinks that they were used for carrying a sword.

[9] Rostovtzeff, 1933, p. 109, figs. 3, 4; Rudenko, 1962, pp. 52-53, pl. VII: 1, 7; for good reproductions see: Cultural Contacts, 1985, No 15; Schiltz, 1994, pp. 240-241, fig. 177.

[10] J. Haskins wrote about covered tails on the Pazyryk felt-hanging and on these buckles in his day: Haskins,1961, p. 163; see also: Bunker, 1992, p. 211, she thinks that the leather sheaths simulate plaiting; Motov, 1999, p. 142.

[11] Rostovtzeff, 1933, p. 100, figs. 1, 2; Rudenko, 1962, pp. 49, 51, pls. I: 5, IV: 5, XXIV: 4; Haskins, 1961, p. 154, pl. 1, fig, 1; Schiltz, 1994, fig. 178.

in the upper third and notched to indicate plaiting in the lower part[12]. Perhaps, what we have here is a depiction of a tail-cover.

There are several representations from the 4th-3rd century BC in which the horse-tail is sleek and appears to be of a different texture in its upper part. This evidence allows us to refer to the presence of a tail-cover[13]. The problem is, however, that all these are representations of horses without any trappings. If saddle and bridle are not represented, is it possible that a tail-cover would be? The bronze sculpture of a horse from Maoling (see below) would appear to enable us to give an affirmative answer. With reference to the images from Xigoupan (Inner Mongolia) K.M. Linduff wrote that they were *kulan*s identifiable by their tufted tails[14]. Yet the image on the gold decoration of Issyk scabbard cannot in any way be interpreted as a *kulan* (Asiatic wild ass). Since this question is controversial I cannot with any confidence include such depictions in my list.

The practice of putting covers on horses' tails was borrowed by the Chinese from their nomadic neighbours, probably at the time when the state of Zhao (Chao) was organizing cavalry troops so as to fight more effectively against the mounted hordes of the northern nomads. This is thought to have taken place in 307 or 305 BC[15]. The terracotta saddled and chariot horses from the burial complex of Qin (Ch'in) emperor Shi Huangdi (246-210 BC) display covered and tightly plaited tails, and also tails with knotted ends (pl. IV: 1), as do the horses of the terracotta warriors from burials of the Han period[16]. A tail-cover is shown very

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[12] Nomads of Eurasia, 1989, pp. 18, 21; Grigor'ev, Ismagil, 1996, pp. 245-247, fig. 1: 2; L'Uomo d'Oro, 1998, p. 213, No. 428.

[13] Examples: buckles from Peter the Great's collection with a mirror-image of a horse being tormented by a fantastic beast of prey (Rudenko, 1962, pp. 52-53, pl. VIII: 7, 8; good reproduction in: Schiltz, 1994, pp. 66-67, fig. 40); gold decoration of a dagger scabbard from the Issyk barrow with a depiction of a horse whose tail has been divided into two and plaited (Akishev K., 1978, p. 29, pl. 25; about dating see: Akishev A., 1984, p. 5); articles from Ordos: a golden diadem (?) from Aluchaideng, the ends of which have been decorated, in particular, with the figure of a recumbent horse with a tail divided into two narrow plaits (Linduff, 1997, p. 49, figs. A 53, A 54; Yatsenko, 1999, p. 160, fig. 2: 2); golden plaques from Xigoupan (CPAM, 1980, fig. 3: 5, fig. 4: 5, 7). For the dating of Ordos finds see: Bunker, 1993, pp. 102-109.

[14] Linduff, 1997, p. 52.

[15] Trousdale, 1975, pp. 61-62; Vainshtein, Kriukov, 1984, p. 120; Bunker, 1992, p. 211; Linduff, 1997, pp. 37, 52, 54.

[16] The Great Bronze Age, 1980, pp. 342, 346, no. 102, 104; Pirazzoli-ťSerstevens, 1982, p. 31, fig. 9; Terracotta Legion, 1988, figs. 59-61, 111, 113, 114; Sotheby's, 1994, No. 240; Kaikodo, 1998, pp. 172-173, No. 54; Sotheby's, 2000, p. 93, No. 114.

clearly on the bronze and gilded statue of a horse from the Maoling Museum, which was found near the burial of the Han emperor Wudi (140-87 BC)[17] (pl. III: 3). These examples show very well how strong the nomad influence was on the creation of the Chinese cavalry — they tried to imitate everything, right up to crenelated mane and covers on horses' tails[18].

The next chronological group of depictions with covered tails are riders on the coins of the states, which were created by nomads within the territory of modern Afghanistan and Pakistan. Despite the miniature size of the images, careful examination reveals that the horse-tail is curved at the top. This creates the impression that the tail is covered: see, for instance, the coins of Vonones and his co-rulers (vassals?) Spalahores, Spalagadames, Spalirises (c. 100-65 BC according to M. Mitchiner), and also the coins of Spalirises as an independent ruler (c. 65-40 BC)[19]. Coins of the Indo-Saka (Indo-Scythian) rulers starting from Maues (c. 90-57 BC) provide a more definite picture: the upper part of the horse-tail is in a cover, which is shown horizontal or curved with a pointed edge extending behind. Hanks of tail hang vertically from under the cover[20]. It is interesting that the same image also appears on the coins minted by the Indo-Greek king Hippostratos (c. 65-55 BC according to O. Bopearachchi), who ruled in the western Punjab. On his coins one can see both a prancing horse with a loose flowing tail (traditional for Graeco-Bactrian and Indo-Greek coins) and also a slow ambled horse with a covered tail (so typical for many emissions of the Indo-Scythian dynasty of Azes)[21] (pl. V: 1). The appearance of this new variant from the mint of King Hippostratos is definitely not some chance phenomenon, but is connected with the influence of his Scythian neighbours. On the coins of the kings of the Azes dynasty (c. 57

[17] A Selection of the Treasure, 1987, No. 346; The Great Treasury, 1988, p. 66, No. 71; Goepper, 1988, p. 380; Chine, 2000, pp. 254-255, No. 99.

[18] E. Bunker writes that the similarity between the sheathed horse-tails of the Peter the Great plaques, Pazyryk horses and pottery horses from the burial complex of Qin Shihuangdi "should not be surprising in view of the fact that Chinese horsemanship and riding equipment were directly borrowed from their northern nomadic neighbours", see: Bunker, 1992, p. 211.

[19] Whitehead, 1914, pl. XIV: 374, 382; Mitchiner, 1976, pp. 449-456, types 681, 682, 686, 687, 689-693, 695-697.

[20] Mitchiner, 1976, p. 473, type 719.

[21] Whitehead, 1914, pl. VIII: 617; Mitchiner, 1975, p. 266, type 445; Bopearachchi, 1998, pl. 70, Nos. 1627, 1628-30.

BC - 30 AD according to D. Mac Dowall[22]) the upper part of the horse-tail, as a rule, is covered, while the tail can be arranged in different shapes: either consisting of two (upper and lower) spindle-shaped parts with a knot or some round decoration between them (coins of Azes I, types 739, 745, 747, 748, 750, 752, of Azilises, types 776, 781, of Azes II, types 827, 846, etc.)[23] or hang like a thin hank, sometimes divided in two beneath the decoration (coins of Azes II, types 824, 828)[24] (pl. V: 2, 3). Another variant is a thin and sleek curved upper part bent at an angle of 90°, apparently representing the cover and the hanks of tail represented by slanting strokes (coins of Azes I, types 743, 744, 749, 751, of Azes and Azilises, type 764, of Azilises, types 801, 802)[25]. There is a similar depiction on the coin of Naštēn[26]. The rider is depicted on the coins of the satraps Zeionises, Arsak, Indravarma, his son Aspavarma and others, who reigned in the territory of the Indo-Scythian kingdom (c. 1-35 AD according to M. Mitchiner), which gradually declined under pressure from Kujula Kadphises and Gondophares. In some of these depictions one can see covered horse-tails[27]. Coins of the Indo-Parthian rulers Gondophares and Abdagases create the same impression[28].

Tail-covers are also depicted on Kushan coins. First of all, on coins of "Heraios-Sanab-Kushan"[29]. On these a plaited horse-tail can be seen — indicated by 5-6 dots and a sleek cover on the top[30] (pl. V: 4). On coins of "Soter Megas"-Vema Takto there is also a horse-tail, plaited or hanging

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[22] Mac Dowall, 1996, pp. 117-118.

[23] Mitchiner, 1976a, pp. 491, 494, 495, 497, 498, 507, 510, 540, 549; see also: Bopearachchi, Rahman, 1995, p. 173, Nos. 723, 727, 729, p. 175, No. 748, p. 181, Nos. 791, 795, 800.

[24] Mitchiner, 1976a, pp. 539, 541, 542; Bopearachchi, Rahman, 1995, p. 176, No. 751. For good depiction see: Weihrauch und Seide, 1996, p. 126, fig. 108.

[25] Mitchiner, 1976a, pp. 493-494, 496-497, 504, 516-518; Bopearachchi, Rahman, 1995, p. 169, No. 702, p. 171, No. 719, p. 175, Nos. 736, 740, 742.

[26] Bopearachchi, Grenet, 1993, pp. 299-307, pl. XVII: 4; Bopearachchi, 1997, pp. 67-74, fig. 1; Bernard, Abdullaev, 1997, p. 84; Bopearachchi, Grenet, 1999, pp. 8-15.

[27] Mitchiner, 1976b, pp. 581, 592, 593, 596, 597, 599-603.

[28] Whitehead 1914, pl. XV: 1; Bopearachchi, Rahman, 1995, pp. 202-205, Nos. 988, 990-995, 999-1002; Bopearachchi, 1998a, figs. 8, 9.

[29] Recently E.V. Rtveladze put forward the hypothesis that the proper name of the ruler, known as "Heraios", was Kushan, see: Rtveladze, 1999, pp. 6-7.

[30] Mitchiner, 1975a, pp. 304-305; Davidovich, 1976, p. 57, pl. I: 1, pl. II: 4, 5; Idem, 1979, p. 18, pl. I. E.A. Davidovich considers that the horse-tail on Heraios coins was knotted 5-6 times, but my interpretation I would regard as more realistic.

loose, and with its top covered[31]. The tail-cover and hanging hanks are clearly to be seen on dinars of Kanishka I bearing images of the god Mazdovan (Mozdooano) sitting on a two-headed horse and of the deity Druvaspa (Lrooaspo) standing beside the horse[32]. Careful investigation of coins from all the above-mentioned groups would probably produce further examples [33].

Various other kinds of Kushan art also include depictions of covered horse-tails. On the 1st/2nd-century AD gold buckle from the city-site of Saksonokhur (Southern Tajikistan) with a depiction of a rider hunting boar with a spear, tail-hair is hanging down from under the horse's tail-cover[34] (pl. III: 2). Another example is provided by the bone plates with engraved hunting scenes from the famous Temple of the Oxus (Takht-i Sangin)[35]. On the intact plate, the tail of a horse galloping to the right is sheathed by a cover with a slanting tapering edge: this is very clear in photographs published by B.A. Litvinsky[36] (pl. VI: 1). Also, on the fragment of a second plate, a horse galloping right has a clearly visible tail-cover and plaited tail (pl. VI: 2). The tail of the horse galloping left is slightly different: it has a cover with a tapering end, the lower part of the tail is knotted or held in place with the help of a round buckle[37]. The dates suggested for the Takht-i Sangin plates vary between the end of the 2nd or 1st century BC and the period from the beginning of the Christian era till the 3rd century AD[38] — I shall examine this at greater length below. The next example we found in the monumental art of Dalvarzin-tepe — the Kushan town in the Surkhandarya valley (Southern Uzbekistan). In a fragment of a wall-painting from the temple in the potter's quarter (DT-9) one can see a

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31 Zeymal, 1983, pl. 19: 45, 48, 59, pl. 20: 63, 66, 72, 91.

32 Tanabe, 1993, p.18, fig.12; Weihrauch und Seide, p. 134, fig. 119.

33 The author of this article has not yet had a chance to work directly with the numismatic material. As regards the publications, the quality of pictures is, regrettably, not always good.

34 Drevnosti, 1985, p.117, No 324; for a good illustration see: Oxus, 1989, pp. 52-53, No. 25.

35 Litvinsky, Pichikian, 1986, p. 117, fig. 3; Drevnosti, 1985, p. 98, No 247; Oxus, 1989, p. 50, No. 22; Litvinsky, 2000, pp. 87-88; Idem, 2001, pp. 137-166; Idem, 2001a, pp. 30, 43-44, 79, 118, 342, pls. 12, 13, 99: 1.

36 Litvinsky, 2001, p. 138, fig. 2, p. 141, fig. 4.

37 Ibid., p. 143, fig. 5.

38 Litvinsky, Pichikian, 1986, p. 117; DT, 1985, p. 98; Litvinsky, 2000, p. 88, Idem, 2001, p. 155.

horse's croup and a covered and plaited tail (pl. V: 6). In this temple, two building periods were identified: the first period fell in the 1st century AD, and the second in the 2nd-3rd century AD, but the period to which the painting belongs is not clear from the publications[39]. E.P. Denisov drew attention to the resemblance between the tail of a horned and winged horse on a seal from the Beshkent-Valley (Southern Tajikistan), which he published, and the covered tails of horses from the 1st Pazyryk Barrow. He dates the seal to the period 1st century BC to 1st-2nd century AD[40].

Depictions of tail-covers from the territory of Sogdiana are known from the Orlat bone plates, which have been published and described many times[41]. Nine horses, six in the battle scene (four of them are undoubtedly pacer-horses) and three in the hunting scene, are engraved on two large belt-buckles. Covers are seen on the tails of four horses taking part in the battle, the croups of the other two are hidden (pl. VII: 1). The tail of the dark horse is plaited, the rest of the tails hang free. Three tail-covers are decorated with short strokes and spots, to convey decoration or seams. One of the three horses on the plate with the hunting scene has an undecorated tail-cover: the tail of this horse is decorated with a rounded buckle, as on the plate from Takht-i Sangin (pl. VII: 2). It may be assumed that on the Orlat plate with the battle scene the tail-covers are depicted as part of the usual horse harness. Various authors have suggested widely differing dates for the Orlat plates: from the 2nd-1st centuries BC to the 4th-5th centuries AD. I have suggested the 1st-2nd centuries AD and shall discuss this question in more detail below.

Examples of the use of tail-covers are also known in Parthia and in the territory of her former possessions. It is possible to make out a tail-cover on the tetradrachms of Artabanus II (III) (10/11-38 AD)[42] (pl. V: 5). On the Hung-e Kamalwand rock-relief the horse-tail is thin at the top and fluffy lower down and appears to be covered[43] (pl. VIII: 1). The same

[39] Pugachenkova, 1978, p. 217, fig. 153; Idem, 1981, pp. 113-114.
[40] Denisov, 1997, p. 330.
[41] Pugachenkova, 1987, pp. 56-65; Idem, 1989, pp. 148-152, figs. 70-72; Idem, 1989a, pp. 104-108. Most recent special publications: Ilyasov, Rusanov, 1998, pp.107-159; Maslov, 1999, pp. 219-236; Nikonorov, Khudiakov, 1999, pp.141-154; Yatsenko, 2000, pp. 86-104; Litvinsky, 2001, pp. 144-155. In these works detailed bibliographies are listed.
[42] Mitchiner, 1978, p. 117, Nos. 617, 618; Weihrauch und Seide, fig. 76.
[43] Hinz, 1963, pp. 170-173, pls. LVII-LIX; Kawami, 1987, pp.177-178, pl. 23.

impression is created by two rock-reliefs in Tang-e Sarwak, one of them depicts a horse and rider wearing armour[44]. A tail-cover has definitely been depicted in the wall-painting from Dura-Europos named "Mithras the Hunter"[45] and in "amateur" graffiti and drawings, also found in that ancient city[46] (pl. VIII: 2, 3). It is considered that the Dura-Europos depictions were created in the second quarter of the 3rd century AD, when the city (captured by Romans from the Parthians in 164/165 AD) had not yet been taken by the Sasanians (253 AD). Although the city was for a long time under Roman control, horsemen's apparel and horse trappings show definitely that "Parthian customs and manners did not disappear with the last of the Parthian kings"[47]. This fact is borne out by the rider's costume in the scene of the sacrifice to Iarhibol; the top-part of the horse-tail in this composition would appear to have a cover[48] (pl. VIII: 4).

Another region where one may find depictions of horses with tail-covers is the Bosporan Kingdom, or, to be precise, the Panticapaeum area. Here, they are depicted in the funerary monuments of the Bosporan nobles, who were very much under the influence of the Sarmatians: in paintings in the so-called "crypt of Anthesterius" and the relief on the tombstone of Athenios (pl. V: 7) dating back to the middle or second half of the 1st century AD[49] we find riders on very lean horses, reminiscent of Orlat horses, with covered tails[50].

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[44] Kawami, 1987, pp. 200-201, fig. 18, pl. 48; Gall, 2001, figs. 8, 11, 15: 2. H. von Gall writes that on the relief of the heavily armoured horse a protective tail-cover ("Schwanzschutz") can be seen: Gall, 1990a, p. 16, fig. 1.

[45] Rostovtzeff, 1935, fig. 79; Cumont, Rostovtzeff, 1939, pp. 112-115, pls. XIV, XV. Unfortunately I cannot agree with the opinion of Prof. B.A. Litvinsky that a flying tassel is depicted in this painting, see: Litvinsky, 2001, p. 151. This opinion probably goes back to the comment by F. Cumont and M.I. Rostovtzeff that the most typical features of the trappings of Mithras' horse were "the large breast phalerae and the balloon-like tassels behind" (Cumont, Rostovtzeff, 1939, p. 112). Yet, after examining high-quality illustrations, I cannot find any tassels here. I think it is obvious that a plaited horse-tail with an almond-shaped end and a covered upper part has been depicted in this painting (pl. VIII: 2), see: Ilyasov, 2001, p. 20.

[46] Goldman, 1985, pl. XVI: a, b; Idem, 1999, pp. 28, 33, 34, 35, figs. A.6, A.14b, A.16, B.1b, F.2.

[47] Goldman, 1985, p. 291-292; Idem, 1999, p. 21, note 11.

[48] Rostovtzeff, 1935, fig. 57; Goldman, 1999, p. 69, F.2.

[49] Desyatchikov, 1972, fig. 2; Antichnye gosudarstva, 1984, pl. 104: 2, pl. 109: 1; Yatsenko, 1995, p. 189.

[50] The presence of tail-covers in the painting in the crypt of Anphesterios was noted by S.A. Yatsenko: Yatsenko, 1995, p. 189. It is necessary to note that D.A. Machinsky was

Judging from numerous representations of riders and horses in the art of European Scythia from the 4th-3rd centuries BC, the covering of horse tails was not a customary practice there. I failed to find it in the pictorial art of Achaemenian or Sasanian Iran as well. In Achaemenian art (reliefs, toreutics, gems) horse-tails are half the normal length, they were often plaited in a special way and their ends were tied in a knot with hanging ribbons. This practice is very different from Orlat depictions, despite the fact that V.E. Maslov has compared them with some Achaemenian depictions from the Oxus Treasure[51]. Judging from Sasanian toreutics, horse-tails were arranged in a variety of different ways, but covers were never used. On the rock-relief in Naqsh-i Rustam showing the investiture of Ardashīr I, the first Sasanian King of Kings, the tails of the horses of Ahura Mazda and Ardashīr "are tied with a ribbon at the top but otherwise hang free", according to G. Herrmann[52]. Judging from the drawing published in her article, it would seem that the tail of Ardashīr's horse had a cover at the top with a stepped edge at the bottom. Nevertheless, it is probably a ribbon after all, wrapped around the top part of the tail. Similar ribbons can be seen in early Sasanian graffiti drawn on the walls of the so-called harem in Persepolis, which appear to depict Ardashīr I and his ancestors — the kings of Fars[53]. If it is after all a tail-cover, which has been depicted at Naqsh-i Rustam, it is the only case we know of, and this detail of harness was not adopted subsequently. In some of the rock-reliefs of Shāhpūr I, for instance with a scene of victory over the Roman emperor Valerian or one of Shāhpūr's investiture in Naqsh-i Rustam, horse-tails are tightly wrapped in ribbons, the ends of which are tied in a bow[54]. This feature is slightly reminiscent of a tail-cover, but it is not a tail-cover at all.

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not the first who drew attention to the specific similarity of details in the painting in the Anphesterios' crypt and the depictions in the Pazyryk felt hanging in the 1980s, as S.A. Yatsenko wrote. E. Bunker had pointed out this similarity in 1977 (Bunker, 1978, p. 122), and long before her, in 1957, O. Maenchen-Helfen had written about the similarity between the Pazyryk depictions and a group of religious depictions from the Black Sea region (in particular, with that on a rhyton from Merdzhany) (Maenchen-Helfen, 1957, p. 126).

51 Maslov, 1999, p. 227.

52 Herrmann, 1969, p. 71, fig. 4.

53 Calmeyer, 1976, p. 67, figs. 3, 4; Gall, 1990, p. 104, fig. 3.

54 Lukonin, 1961, pl. 8; Idem, 1969, figs. 8, 10; Herrmann, 1981, figs. 1, 2, 3; Herrmann, MacKenzie, 1989, p. 16, text fig. 5, fig. 1, pls. 9, 16, 17.

"Flying" Tassels

Another variety of horse-trapping is the tassel, made from light materials and as a rule attached to the saddle by long strings. The fast movement of the horse would lift them and make them "fly" behind the horseman. Flying tassels are represented most frequently in Sasanian art. It is thought by some that this attribute once symbolized legitimate kingship (*Xvarnah*) in Sasanian Iran and was an accessory for horses of the King of Kings and his heir[55]. Therefore representations of the tassels in other regions show us the directions in which the contacts and influences of Sasanian Iran developed. The incorrect depiction of tassels, moreover, would show that a craftsman was not familiar with the original tassels and had depicted only an approximation of them[56]. Naturally, all non-Sasanian depictions of horses decorated with tassels cannot be dated earlier than to the second quarter of the 3rd century AD. Such conclusions stem from the hypothesis proposed by K. Tanabe and supported by B.A. Litvinsky. To what extent, however, does this opinion correspond to the facts? Before answering this question it is necessary to enumerate depictions of the tassels known to us.

First, as in the case of the tail-covers, we should turn to finds from the 1st Pazyryk barrow. We must pay attention to one kind of decoration used for horses: three round straps with tassels of horsehair dyed red and inserted into short wooden pipes, so-called "vorvorka", hanging from both sides of the saddle (pl. I: 1) ("troichatka" is the term used for them by M.P. Gryaznov)[57]. This decoration is easily recognizable as the prototype for the Sasanian tassels[58].

Probably we can see the earliest examples of tassels on the above-mentioned golden belt-buckles with depictions of a boar hunt from Peter the

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[55] Tanabe, 1990, p. 53. B. Goldman recently made the witty suggestion that tassels may serve as fly whisk (swats) as well as decoration: Goldman, 1999, p. 28. For the similar opinion of R. Ker-Porter, which was first published in 1821 ("to disperse, by its motion, flies from annoying the horse") and for another, most exotic opinion of W. Hinz ("Oder hat vielleicht der Ritter mit ihnen dem Gegner Sand in die Augen gestreut?") see: Hinz, 1965, p. 155 and note 2.

[56] Tanabe, 1990, p. 56.

[57] Griaznov, 1950, p. 57, figs. 8-10, 12-16, 22, pls. VII, XVI.

[58] On Sasanian rock-reliefs of the 3rd century these "*troichatka*s" are also depicted. They look like wavy ribbons with balls (or discs?), trefoils or bells hanging from their ends and sometimes without any decorations at all.

Great's collection[59]. Decorative tassels worked in incrustation hang down from the harness in front of and behind the saddle, while the largest tassel hangs down from the browband disc by the cheeks (pl. II: 1, 2). Tassels are also depicted on bronze belt-buckles from Ordos with figures of two fighting warriors and their horses[60]. A large tassel hangs down on the right side of the horse standing to the left, while the right-hand horse with its left side visible has no tassel on its left side (because it is hanging down on the opposite side?) (pl. IV: 3). Belt-buckles like this date back to the 3rd-1st centuries BC[61]. On the belt-buckle from Xichagou (Liaoning Province, North-eastern China), housed in the Chinese Historical Museum, two riders with long swords are arranged one behind the other[62]. The first rider sits on a rearing animal, and as a result the large tassel is shown touching the ground and can be seen under the rider's left foot. Another tassel in the normal position hangs down behind the saddle of the second horseman: this tassel is also long and almost touches the ground. I have come across opinions to the effect that no tassels were depicted on the Ordos buckles, but rope or leather loops, predecessors of stirrups[63]. Without touching upon the problem as to when and where stirrups and their prototypes first appeared, I shall merely note that stirrups appeared no earlier than the 4th century AD[64]. On the

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[59] See note 11. Tassels depicted on these buckles were mentioned by M.I. Rostovtzeff, who wrote: "Note also the tassels behind the saddle, which reappear later on Sassanian and Chinese monuments", see: Rostovtzeff, 1929, p. 53, pl. XVI: 2. For the objects from the Siberian collection as a whole and for these buckles in particular various dates have been proposed, but the 4th-3rd century BC seems to me the most probable. The obvious similarity between many details depicted on the belt-buckles and the Pazyryk complex has been noted by many scholars (Maenchen-Helfen, 1957, p. 136; Haskins, 1961, pp. 159-165; Trousdale, 1975, pp. 117, 265).

[60] Jettmar, 1964, p. 237 (from the collection of the British Museum). This buckle would appear to have been presented as an object from the Victoria and Albert Museum, see: Bunker, 1978, p. 137, pl. 2b.

[61] Bunker, 1993, pp. 109-111.

[62] The Great Treasury, 1988, p. 68, No. 76. It is likely that the riders on this buckle are seated on fantastic creatures, not on horses (Trousdale, 1975, p. 68, fig. 45; Bunker, 1978, p. 128, pl. 4b; Linduff, 1997, p.80, fig. A112). Yet these monsters are saddled and decorated like horses.

[63] B.A. Litvinsky think that a strap loop, the precursor of the stirrup might be depicted on the Takht-i Sangin plates: Litvinsky, 2001, p. 140. It seems to me that this is more likely to be a band used for tightening footwear, just as in the case of the footwear of the Orlat warriors and hunters, see: Ilyasov, Rusanov, 1998, p. 111, pl. XII.

[64] Bivar, 1955, pp. 61-65; Idem, 1972, pp. 286-287; Ambroz, 1973, pp. 81-98; Vainshtein, Kriukov, 1984, pp. 114-130; Wajnschtejn, 1996, pp. 224-238. For opposite opinion see: Kyzlasov, 1973, pp. 24-36.

Ordos buckles the above-mentioned detail is, firstly, too large and hangs down almost touching the ground and, secondly, it is attached behind the saddle. Obviously, this detail cannot help the rider to mount, which we know to be the main purpose of stirrups. So, what we find depicted on the Ordos belt-buckles is tassels. They could be found singly and might hang down on either the left or the right side, but they could appear in pairs: the Ordos depictions do not provide a definite answer. Smaller tassels hang down the cheeks, like the small tassels of Orlat battle-horses (pl. VII: 1), and they also hang in front of and behind the saddle.

Horses decorated with tassels can be found among Chinese funerary terracotta statues dating from the Han era (206 BC-220 AD): for example, on a terracotta horse from a private collection (Tokyo) with harness depicted in paint, there are head, chest and under-tail straps, buckles, phalerae and also tassels painted in red and hanging on cords attached to head-straps[65]. It seems that a large tassel is hanging down from the phalerae on to the horse's side. A similar painted horse from the collection in the Tsui Museum of Art (Hong Kong) is decorated with large tassels hanging down on cords from the brow-band discs on to the neck and behind the saddle[66]. A pottery horse of the Han period with painted blue tassels hanging from long red cords was once on sale at a Christie's auction[67] (pl. IV: 2). A pair of painted terracotta horsemen dated to the 2nd-1st century BC, are mounted on horses decorated with almond-shaped tassels, hanging down on cords over their necks and behind their saddles[68]. This shows how the decoration of horse harness with tassels — including those hanging behind the saddle — was widespread in Han China. On stamped tiles of the 3rd century BC, stemming from old Lo-yang in Honan, tassels "flying" behind the saddlecloth[69] can be seen: on one of these two small tassels are shown attached to the saddle-cloth and fluttering behind the horseman, not behind his back but lower down. Often the horse-tail, not the tassel, was depicted in China in the "flying" position, symbolizing the rapid movement of the horse. A very famous example is the bronze statue

[65] Pirazzoli-t'Serstevens, 1982, p. 232, fig. 157. The terracotta horse is 39 cm long and is dated to the 2nd century BC — 2nd century AD.

[66] The Tsui Museum of Art, 1993, pl. 17. The terracotta horse is 57 cm high, and has been dated to the Western Han period (206 BC — 9 AD).

[67] Christie's, 1997, p. 57, pl. 13, lot 443.

[68] Kaikodo, 1997, pp. 188-189, 352, No. 53.

[69] Maenchen-Helfen, 1957, pp. 95-96, fig. 12.

of the pacer-horse from Leitai, Gansu Province (Eastern Han Dynasty)[70]. Sometimes there is something like a plume "flying" behind the rider, for instance, on the pottery tiles from the Sichuan Province (Eastern Han Dynasty) with a depiction of mounted Hsiung-nu huntsmen armed with bows[71].

On the Orlat plate with the hunting scene flying tassels are engraved behind two riders (pl. VII: 2). Tassels are attached to the saddle (with short cords?), on the left side of the horses and each horse has only one tassel. Tassels are depicted with thin lines, it looks as if they were made from hair, for example horsehair, and clipped to lend them the necessary shape. The middle part of the tassels is covered by a ribbon (so that they keep their shape[72]). Made this way a tassel would be very light and rise in the air when a horse moved quickly, as in the "flying gallop" depicted on the plate[73]. Behind the rider in the bottom register we do not find a tassel, but something else, that is diamond-shaped. This object is engraved with oblique, not horizontal lines. Perhaps it is a piece of a cloth fluttering in the wind as the horse gallops along.

Tassels on long cords or straps are depicted on both the Takht-i Sangin plates. In spite of the horse's flying gallop, the tassel is shown hanging at a slight angle backwards from the vertical line. Each horse has only one tassel, hanging on the side opposite the viewer[74] (pl. VI: 1, 2).

Two tassels are depicted in the above-mentioned scene of the sacrifice offered to Iarhibol in Dura-Europos. One of the tassels is "flying" despite the slow movement of the horse, while the other is hanging down at a slight angle (pl: VIII: 4). Both tassels are shown on the right side of the horse, which is reminiscent of the "troichatka" from the 1st Pazyryk barrow. Two flying tassels are shown in the depiction of the mounted archer from the N8 quarter in Dura-Europos[75].

The largest number of depictions of tassels is to be found in Sasanian official art. There are rock-reliefs, graffiti, toreutics. In these images the

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70 The Great Treasury, 1988, p. 92, No. 148.

71 Ibid., p. 86, No. 131.

72 There is a cross-band similar to the Orlat bands on the tassel depicted on the Ordos belt-buckle with fighting warriors.

73 Such tassels are not depicted in the battle scene: the harness of the battle-horses is decorated with small tassels attached to round plaques linking the straps of the head harness (pl. VII: 1).

74 Litvinsky, 2001, pp. 140, 143, fig. 6.

75 Goldman, 1999, pp. 24, 28, A.6.

way tassels are depicted depends on how the horse is moving: they can hang almost vertically[76] or fly behind the rider.

Horse-trappings and problems of interpretation of plates from Orlat and Takht-i Sangin

Details of horse-trappings were used for some late dates of bone plates from Orlat and Takht-i Sangin[77]. Careful study of these details allows us to turn our attention to such interesting finds once more. In an article published in 1998 we attempted to analyse the function and date of the Orlat plates and to describe specific features of the depictions, in particular of the range of weapons[78]. One of the main questions, namely the problem of dating, has been mentioned by me since then as well[79]. Interest in the Orlat plates is not fading and in recent years several studies have been published, in which many questions have been discussed including the dating of the plates[80]. In a number of works the Orlat plates are mentioned briefly or used as examples to substantiate opinions of various authors[81]. Yet, despite the abundance of publications specialists still do not agree on the dating and function of the plates. All this explains the need to study the question once more. I intend to analyse briefly not only new publications, but also the old ones which I did not use when writing my first article.

[76] Herrmann, 1969, pp. 70-71, 73, 76, 77, 85, 88, figs. 4, 6-10, pls. Ia, IV, V, VIa, VIIIa, XIIa, XVIa; Hinz, 1969, pls. 69, 69a, 71-73, 76, 77, 106; Trümpelmann, 1975, pl. 1, 7; Calmeyer, 1976, figs. 3, 4, pl. 14: 2; Herrmann, 1977, p. 7, pls. 1, 2b, 3, fig. 1; Herrmann, 1981, figs. 1-3; Herrmann, 1983, pl. I, fig. 1; Vanden Berghe, 1983, figs. 8, 11, pls. 18, 20-22, 25, 28, 30, 33, 37; Herrmann, MacKenzie, 1989, p. 16, text fig. 1-4, fig. 1, pl. 9; Harper, Meyers, 1981, pp. 77-79, pls. 9-11, 15, 17, 18, 20-23, 25, 26, 28, 30, 32.

[77] Tanabe, 1990, pp. 55-58; Litvinsky, 2001, pp. 150-152.

[78] Ilyasov, Rusanov, 1998, pp. 107-159.

[79] Ilyasov, 2001, p. 17-30.

[80] See: Maslov, 1999, pp. 219-236; Nikonorov, Khudiakov, 1999, pp. 141-154; Yatsenko, 2000, pp. 86-104; Litvinsky, 2001, pp. 144-155.

[81] Nicolle, 1996, p. 7, fig. 1 (with rather erroneous explanations); Brentjes, 1997, pp. 184, 191; Mode, 1997, p. 546, fig. 4b; Nikonorov, 1997, p. 17; Treister, 1997, pp. 47, 61, 62, 68; Istvanovits, Kulcsar, 1998, p. 212, fig. 11; Rets, Yui Su-Hua, 1999, p. 44; Alimov, Bogomolov, 2000, pp. 166-167, 171-172, figs. 1, 4; Gorbunova, 2000, pp. 43, 44, 45, 47, fig. 3; Marshak, 2000, pp. 31, 33, 35, fig. 5; Yatsenko, 2000a, pp. 361; Lebedynsky, 2001, pp. 39, 112, 115, 180, 203; Litvinsky, 2001a, pp. 44, 79, 118, 340, 342, 424, pls. 14, 99: 2-4, 10, 13.

B. Brentjes was the first scholar after G.A. Pugachenkova to dedicate specialist publications to the Orlat (Kurgan-tepe) plates[82]. He was also the first to write about covered horse-tails (in an article appearing in 1989)[83]. B. Brentjes considers that the plates should be dated to about AD 200 and that they are "the first depictions of Central-Asian Huns". Some of his comments, for instance, about the non-Iranian character of the representation of the horse with its head turned back, were rightly criticized by V.E. Maslov[84]. Adding to his arguments I should like to note that similar depictions are also to be found in Scythian (more precisely Graeco-Scythian)[85] and Sasanian[86] depictions of horses. Discrepancies regarding the dating of the Orlat plates as presented in B. Brentjes' monograph dedicated to the weapons of the Sakas and other Central-Asian tribes are astonishing[87]. Dates for the plates and Barrow 2, where they were found, fluctuate from the 3rd-2nd centuries BC (date of Barrow 2 on p. 30) through the 2nd-1st century BC (plate with a battle scene, p. 62 and caption for pl. X) to the 3rd-4th century AD (sword from Barrow 2, caption for pl. IX). Given that one and the same range of material is under discussion, it is not clear how B. Brentjes could date it or how these dates could correlate with his publications of 1989-90. Perhaps it is a question of misprints and insufficient proof-reading, though already in the article published in 1993 one can find the 3rd-2nd century BC as an unsubstantiated date for the Orlat barrow 2[88].

The idea that the Orlat plates should be dated to the 3rd-4th century AD and represented the Hephthalites was proposed by M.V. Gorelik[89]. This

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82 Brentjes, 1989, pp. 39-41; Idem, 1990, pp. 173-182.

83 Brentjes, 1989, pp. 39, 40; Idem, 1990, pp. 177, 178. See also: Bernard, Abdullaev, 1997, p. 81; Ilyasov, Rusanov, 1998, pp. 112-113, pl. XI; Maslov, 1999, p. 227; Nikonorov, Khudiakov, 1999, p. 147; Ilyasov, 2001, pp. 17-30.

84 Maslov, 1999, pp. 225, 228; cf.: Brentjes, 1989, p. 40.

85 Silver gilded vessel from the Solokha barrow, 4th century BC, see: Scythian Art, 1987, Nos. 158, 159; Schiltz, 1994, Abb. 332.

86 Silver gilded vessel from a private New York collection (the former Fabricius collection) see.: Harper, Meyers, 1981, pp. 77-79, pl. 26; Marschak, 1986, p. 27, fig. 9; and also silver vessel from the Tenri Museum collection (Nara, Japan): Tanabe, 1987, fig. 1.

87 Brentjes, 1996.

88 Brentjes, 1993, p. 43.

89 Gorelik, 1993, p. 159 (however, in caption to fig. 2 4th century BC is indicated); Idem, 1995, pp. 403-404. Recognizing the Orlat warriors as Hephthalites, one may consider that the major problem regarding the origin of the Hephthalites has been conclusively resolved in favour of the Central Asian, and not the Badakhshan theory. There are too many Chinese (particularly from the Han period) parallels for the iconography of the Orlat images.

interpretation gave rise to serious objections on my part. First of all, I do not accept that the armament complex of the warriors from the "Painter's cave" in Kyzyl (pl. IX: 1) is "nearly identical" to the Orlat one[90]. The Orlat warriors do not have any "pèlerine" or scale-armour sleeves, which the Kyzyl warriors have. The figured plates which covered the skirts of the Kyzyl riders (plates of type 6 according to M.V. Gorelik[91]) are similar to the cover of Penjikent armour[92], but in no way to the Orlat armour. The warriors from the "Painter's cave" in Kyzyl have different-shaped helmets (they are almost conical in shape with a flap extending downwards over the nape of the neck and also covering the ears) with figured terminals, some of which are zoomorphic: in one instance a plumage was depicted attached to the end of a long shaft and some of the helmets had no terminal[93]. They also have bow-cases of a different construction, which M.V. Gorelik described as a "tube-like case for arrows with a narrow curved case for a bow without a bow-string sewn on at the side"[94]. Kyzyl swords have a broad straight guard and disc-shaped pommels and they were carried using a scabbard slide, like the Orlat swords (pl. IX: 1, 3). Yet, the Kyzyl swords are an example of a further stage in the evolution of swords of the Orlat type. They appeared in Eurasia "at the time of the Great Migration of the Peoples and were particularly widespread in Europe in the 5th-7th centuries" as aptly noted by M.V. Gorelik [95]. A classical example of such a sword is provided by the 5th-century sword from Altussheim (South-west Germany) with a massive rectangular guard with cloisonné style decoration[96] (pl. IX: 8). Incidentally, this sword's scabbard had a tip (chape) which is made from the re-used lapis-lazuli guard of a typical Chinese shape (similar to Orlat guards)[97]. I should also like to mention the sword from Dmytrivka (in the Zaporozhye region of the Ukraine) and the sword from the 5th-century Alanian burial on Lermontov's Rock (North

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[90] Gorelik, 1995, p. 404.
[91] Ibid., p. 418.
[92] Belenizki, 1980, pp. 80, 82, 109; see also the armour of warriors on the 7th-century Sogdian silver dish from Kulagysh: Marschak, 1986, pp. 284-286, fig. 198.
[93] Gorelik, 1995, p. 423, pl. 54: 1, 2.
[94] Ibid., p. 378, pl. 46: 2.
[95] Ibid., p. 389.
[96] Maenchen-Helfen, 1973, pp. 233-237, fig. 10B; Das Gold, 2001, p. 121; Lebedynsky, 2001, pp. 123-124.
[97] Maenchen-Helfen, 1973, pp. 236, fig. 10A.

Caucasus region)[98] (pl. IX: 6, 7). A sword with a long grip and guard similar to the Kyzyl ones is held by King of Kings Khusrav II (591-628) depicted on a silver dish with a throne scene (from the Hermitage collection)[99]. Even for non-specialists in the field of ancient arms and armour it must be clear that there is little similarity between the Orlat and Kyzyl ranges (if we do not take into account the obvious fact of their common origin)[100]. They reflect different stages in the development of weaponry and there are no cogent arguments for assuming, like M.V. Gorelik, that "the whole range of weaponry is almost identical: distinctions are only a question of phases, and they are very short — 50-100 years"[101]. Equally dubious is his categorical assertion that the Orlat (Kurgantepe) plate can be "dated quite reliably to the 3rd-4th century"[102]. It is not clear — by whom and why? K.I. Retz and Yui Su-Hua aptly noted with every justification concerning Gorelik's opinion regarding the similarity between Orlat depictions and those from Kyzyl and Tepsei: "The observed similarity is established beyond doubt, and it can be explained not by the chronological proximity of the depictions, but by the long existence of the tradition for manufacturing armour, which can be traced back to the middle of the I millennium BC"[103]. These authors believe that on the Orlat plates K'ang-chü armour and helmets have been depicted dating from the time of the struggle between Jïjï (Chih-chih) Shan-yü of the Hsiung-nu and Han forces (36 BC).

Highly controversial opinions on the dating of the Orlat plates have been expressed by S.A. Yatsenko. While in his articles dedicated to Sarmatians (one of which was written together with M.Y. Treister) he mentioned the first centuries AD[104], in a recent work dedicated to costume in Eastern Turkestan another quite different date was suggested — the 4th-5th centuries[105]. The reason for such a shift in the author's view is not

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98 Lebedynsky, 2001, p. 121.

99 Trever, Lukonin, 1987, p. 109, pl. 19. P.O. Harper carefully dates this dish between the reigns of Kavad I (488-531) and Khusrav II (591-628), see: Harper, Meyers, 1981, pp. 114-115.

100 It is very clear from the illustration in Gorelik's article, where he shows warriors from the "Painter's Cave" and Orlat together, see: Gorelik, 1993, p. 152, fig. 2.

101 Gorelik, 1995, p. 404.

102 Ibid., p. 404.

103 Rets, Yui Su-Hua, 1999, p. 44.

104 Yatsenko, 1992, pp. 79-80; Yatsenko, 2000, p. 88, note 11, p. 90; Treister, Yatsenko, 1998, pp. 64, 65.

105 Yatsenko, 2000a, p. 361.

explained. We find a reference to articles by M.V. Gorelik and P.P. Azbelev (who drew parallels between the Orlat and Tepsei depictions[106]). Yet M.V. Gorelik "confidently dates" the Orlat plates to the 3rd-4th and not the 4th-5th centuries. Earlier in this article I have examined Gorelik's line of argument which is unconvincing in my opinion. I have also made clear my opinion about Azbelev's dating and interpretation[107]. In his recent two articles S.A. Yatsenko referred to the article D.V. Rusanov and I had written criticizing the idea of a battle between the K'ang-chü and Yüeh-chih depicted on the Orlat plate[108]. So as to avoid the false impression that this is our opinion, I stress that on the page in question we had outlined Y.A. Zadneprovsky's opinion, which we immediately preceded to refute there and then[109]. In general, I should note that the images depicted on the Orlat plates can with every justification be used to add weight to the theory of the Central-Asian origin of the Alans which is energetically defended by S.A. Yatsenko and T.A. Gabuev[110].

M. Mode dates the Orlat plates to the 2nd-4th centuries AD and thinks they depict the Hsuing-nu[111]. It is to be assumed that in this matter he simply follows B. Brentjes' opinion. E. Istvanovits and V. Kulcsar consider that the Orlat plate with the battle scene "because of its size and shape, is likely to have served as a bag cover"[112] — an opinion that lacks any foundation. Other equally groundless definitions have been put forward: for instance, "appliqués de carquois"[113]. Most specialists agree that the Orlat plates were used as belt-buckles. This opinion was first suggested by us in 1991, but taking into account the character of the publication, no detailed argument was provided[114]. This has subsequently been confirmed in publi-

[106] Azbelev, 1992, pp. 211-214.

[107] Ilyasov, Rusanov, 1998, p. 129; Ilyasov, 2001, p. 23. See also: Yatsenko, 2000, p. 92.

[108] Yatsenko, 2000, p. 88, note 12; Yatsenko, 2001, p. 104.

[109] Ilyasov, Rusanov, 1998, p. 134.

[110] Yatsenko, 1993, pp. 60-72; Idem, 1993a, pp. 97-105; Gabuyev, 1999; Idem, 2000, pp. 50-62.

[111] Mode, 1997, p. 546. His attempt to specify how the scabbard slide was attached to the scabbard of Kanishka's sword on well-known statue seems to me not very successful.

[112] Istvanovits, Kulcsar, 1998, p. 212.

[113] Les arts, 1999, p. 97, figs. 135, 136 (the photograph of the plate with a battle scene on p. 96 in this book is the wrong way round).

[114] See my explanatory text "Orlat burial ground" and my and D. Rusanov's annotations in the catalogue "Culture and Art of Ancient Uzbekistan" (Moscow, 1991, pp. 176-178), and also our annotations in the catalogue "Antiquities of Southern Uzbekistan" (Tokyo, 1991, pp. 306-307). Thus, V.E. Maslov is not entirely correct in attributing the

cations by a number of other authors[115]. Significant materials from China and Korea were published by Sun Ji. In his article one can find paired belt-buckles which are similar in shape to Orlat belt-buckles, as well as suspended shield-shaped elements[116] (pl. X: 1, 2).

In my opinion, K.A. Alimov and G.I. Bogomolov were not successful in their attempt to use the Orlat depictions as parallels[117]. A sword with a round pommel and straight guard found in the barrow near Achamaili Village (Tashkent Province) (pl. IX: 4) undoubtedly links in with swords with metallic disc-shaped tops on their hilts and a straight guard from Liavandak and Agalyksai (pl. IX: 5) burial mounds (the Bukhara and Samarkand areas within Sogdiana) as aptly noted by the authors[118]. Yet the statement that the sword of a warrior depicted in the top left corner of the Orlat battle plate "is almost a direct parallel for the Achamaili sword" seems to me incorrect. This rather inappropriate comparison of the Agalyksai and Liavandak swords with the Orlat swords had already been made by other authors[119]. It was repeatedly noted that Orlat warriors had horsemen's swords of the Chinese type. First of all this is indicated by the typical Chinese shape of the guard already known from the bronze swords, cast in a similar mould, of the Eastern Zhou era, dated to the end of the 5th or beginning of the 4th century BC. In the Han era they were made detachable and fashioned mainly from bronze and nephrite[120]. These guards are depicted in the engravings on the Orlat plates very carefully. On the other hand, the guard of the Achamaili sword (like those of the Agalyksai and Liavandak swords) have no saddle grooves or triangular ridges on the side of the blade, which are so characteristic for Chinese and Orlat guards. Detachable disc- or mushroom-shaped pommels and heads of nails hammered into the sword-handles to hold them in place, are also clearly visible on the plates. Although they are engraved with different degrees of detail, there are not "different kinds of

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first publication of this idea to M.V. Gorelik, see: Maslov, 1999, p. 224. Our opinion is expounded in: Ilyasov, Rusanov, 1998, pp. 107-110, pls. VI, VIII-X.

[115] Yatsenko, 1992, p. 78; Idem, 2000, p. 86; Gorelik, 1995, p. 403; Usbekistan, 1995, p. 37, figs. 41, 42; Nicolle, 1996, p. 7, fig. 1; Treister, Yatsenko, 1998, p. 64; Maslov, 1999, pp. 224-225; Nikonorov, Khudiakov, 1999, p. 143; Sarkhosh Curtis, 2001, p. 307.

[116] Sun Ji, 1994, pp. 50-64, figs. 5: 2, 6: 1-3, 7: 1, 2, 8: 1-3, 11: 1, 2, 12: 1.

[117] Alimov, Bogomolov, 2000, pp. 166-167, 171-172, fig. 1, 4.

[118] Ibid., p. 171; see: Obelchenko, 1967, p. 185, fig. 3: 1.

[119] Bernard, Abdullaev, 1997, p. 80.

[120] Trousdale, 1975, pp. 12, 52, 54-55, figs. 3, 35, 37; Gorelik, 1995, p. 389.

pommels — stepped, bar-shaped and spherical", as these authors would have us believe[121]. In the Orlat depictions we do not have a single pommel which is comparable with Achamaili (Agalyksai, Liavandak) pommels. Orlat pommels, as well as scabbard slides and rectangular (trapezoidal) chapes at the end of the scabbard (all of which can be seen on the plate) are typical for Chinese swords of the Han era[122] (pl. IX: 2). The nephrite guard and scabbard slide, as well as a marble pommel (which were found in Barrow 2 together with the engraved bone plates) confirm the attribution of the Orlat swords. V.E. Maslov suggests that the scabbard from Barrow 2 may have had a nephrite chape before, which was lost while the sword was in use, and this is perfectly possible.

To carry this subject further I shall touch on some questions raised by N.G. Gorbunova, in particular that regarding the date of the Orlat sword or dagger. After incorrectly calling the Orlat guard (which is cut from a single piece of nephrite) an iron guard covered with nephrite plates, she goes on to note that she knows of no swords with such guards found within the territory of the Russian steppes[123]. It will be recalled, however, that a sword complete with a similar nephrite guard and scabbard slide was found in Barrow 19 of the Sladkov burial ground[124]. An agate guard of this shape was found in Chersonesus[125]. Finds of bronze guards of this shape from South Tajikistan, Bashkiria, near the Ishim and Kuban rivers are listed by V.E. Maslov[126], these have all been dated to the 1st-2nd centuries AD and are undoubtedly of Chinese origin.

Before moving on to works that are specifically dedicated to Orlat and Takht-i Sangin plates, I shall dwell on an article by B.I. Marshak published

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[121] Alimov, Bogomolov, 2000, p. 171.

[122] Xia Nai, 1983, p. 145, figs. 10, 11; Ilyasov, Rusanov, 1998, p. 117-119; Maslov, 1999, pp. 220-221.

[123] Gorbunova, 2000, p. 47.

[124] Maximenko, Bezuglov, 1987, p. 183, fig. 2: 1, 2, 7; Ilyasov, Rusanov, 1998, pl. XIV: 6, 7, pl. XV: 5; Maslov, 1999, fig. 1: 4. I should note some discrepancies in information about one and the same finds — in the monograph of V.E. Maximenko this guard and scabbard slide are described as from Barrow 19, and elsewhere as from Barrow 21, see: Maximenko, 1998, pp. 282-283, figs. 74, 79. Yet judging from the main publication (Maximenko, Bezuglov, 1987) and some other publications (Bezuglov, 1988, p. 113; L'Or des Amazones, 2001, p. 246, No. 282), these finds did come from Barrow 19.

[125] Maenchen-Helfen, 1973, pp. 236, fig. 12; Mode, 1997, fig. 5.

[126] Maslov, 1999, p. 221. I would add to his list one more article in which one can see a picture of the guard from Barrow 1 of the Seriogino burial-ground in the Trans-Kuban region: Kozhukhov, 1999, fig. 2: 3.

recently in a volume of papers delivered at an international conference entitled "La Sérinde, terre d'échanges" (Paris, 1996). In this article he mentioned the Orlat plates, but usually dated them to the 3rd-4th centuries and makes a habit of not substantiating his point of view[127]. Perhaps, in the interests of an objective solution for the problem of dating the Orlat plates, it would be very useful if B.I. Marshak, an eminent specialist in the archaeology and ancient art of West Central Asia, would substantiate his own position at greater length. Possibly his authoritative opinion supported by scientific proofs could long ago have put a stop to all discussions and debates on this topic. Yet so far his assertions have been rather unconvincing, alas!

A very detailed and competent analysis of the Orlat warriors' range of weapons has been published by V.P. Nikonorov and Y.S. Khudyakov. Without dwelling on the obvious merits of this work, I would mention a few points which seem to me disputable. I think that all the archers are armed with asymmetrical bows and not just one[128], as the description implies. On the small shield-shaped plate with the depiction of single combat the depiction is of a more diagrammatic nature. Therefore what we have here is a rather "imprecise picture" and not "a single-bladed broadsword with a slightly curved handle"[129]. One warrior in the drawing on this plate looks bare-footed and yet his feet "have straps round them"[130]. Careful investigation of the original shows that the plate at this spot is covered with tiny cracks, which the artist, who made the drawing, could have taken for a depiction of toes, so the straps are to hold footwear in place and not wrapped round bare feet. There is no "tassel or any other kind of hanging decoration" at the point where the slide was attached to the scabbard[131]. It would appear to me to be the loosely hanging end of a sword-belt[132]. There are no special protective armlets[133]: on the outside protective plates cover the arms down to the wrist, while on the inside they

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[127] Marshak, 2000, pp. 31, 33, fig. 5. See also: Marshak, 1987, pp. 235-236; Marshak, Raspopova, 1992, pp. 86, 87, 88, 89; Marshak, 1992, pp. 208-211; Marshak, 1996, p. 430.

[128] Nikonorov, Khudiakov, 1999, p. 144; cf.: Antiquities, 1991, p. 306; Ilyasov, Rusanov, 1998, p. 120, pl. XIII.

[129] Nikonorov, Khudiakov, 1999, p. 145.

[130] Ibid., p. 146.

[131] Ibid., p. 145.

[132] Ilyasov, Rusanov, 1998, p. 117, pl. XIII.

[133] Nikonorov, Khudiakov, 1999, p. 146.

only reach down as far the elbow-joint[134]. It is hard to see the "small round shield"[135] mentioned as being on the original plate. I was unable to make out sheathed horse-tails on the Tepsei plaques[136]. In general the authors bring out similarities between the Orlat and Tepsei depictions and date the plates to the Hunno-Sarmatian era.

A detailed argument in favour of the 1st-2nd centuries AD as the date for the Orlat plates is proposed by V.E. Maslov. In many points our opinions coincide. Some of his observations complement ours, for example, with regard to the golden threads — remains of brocade[137]. I find his criticism concerning our opinion that the artisan made a mistake when he engraved the armoured skirt of one of the warriors, definitely justified[138]. To be precise I should also note that some of his arguments had already been voiced by us[139]. As far as I know, not four but three small shield-shaped plates go to make up the Orlat belt-set. V.E. Maslov's statement about similarity in style between depictions of trees on the Orlat hunting plate and in the Buddhist wall-paintings at Kara-tepe coincide with the opinion previously expressed by B. Brentjes[140]. It should be emphasized that very similar conclusions drawn independently by V.E. Maslov would appear to testify to the clearly objective character of our shared conclusions.

Recently an article was published by B.A. Litvinsky dedicated to a detailed study of the Takht-i Sangin plates[141]. He pays a good deal of attention to the Orlat plates (comparing the Takht-i Sangin and Orlat plates has already become a traditional practice)[142]. B.A. Litvinsky profounds a detailed analysis, criticizes opinions voiced previously and expounds his own arguments in favour of the 3rd century AD as a date for the Takht-i Sangin and Orlat plates. Yet some points in this remarkable study seem to me debatable. First of all, I doubt that the Takht-i Sangin plates ever

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134 Gorelik, 1993, p. 159; Ilyasov, Rusanov, 1998, p. 115; Maslov, 1999, p. 222.

135 Nikonorov, Khudiakov, 1999, p. 146.

136 Ibid., p. 147; cf.: Efimov, Pauls, Podolsky, 1995, figs. 2a, 2b, 3a, 3b, 4b, 6a.

137 Maslov, 1999, p. 226.

138 Ibid., p. 223; cf.: Ilyasov, Rusanov, 1998, p. 135, note 4; Ilyasov, 2001, p. 24, note 2.

139 For instance, for discussion of the dagger fastened to the hip, some features of the armour and parallels for the Saksanokhur belt-buckle, see: Maslov, 1999, pp. 222, 227; cf.: Ilyasov, Rusanov, 1998, pp. 115, 116, 127.

140 Brentjes, 1990, p. 178.

141 Litvinsky, 2001, pp. 137-166.

142 Ibid., pp. 144-155; see also: Pugachenkova, 1989a, pp. 101-103, 108; Brentjes, 1989a, p. 39; Idem, 1990, p. 177; Ilyasov, Rusanov, 1998, p. 130; Maslov, 1999, p. 228.

served as the covering for a casket. We have already expressed our suggestion that they are belt-buckles: they are similar to the Tulkhar bone belt-buckles as regards their slightly trapezoidal shape and size (the Takht-i Sangin plate measures 21.2 x 6.2-6.4 cms and the Tulkhar plate 20 x 6 cms). Bone belt-buckles were found *in situ* in Barrow II, 7 in the Tulkhar burial-ground (South Tajikistan)[143]. V.E. Maslov supported our suggestion[144]. Unfortunately, all that remains of the left-hand plate, which usually served as a clasp and had an aperture through which the belt-end could be passed, is a fragment. This means we are unable to say anything definite about its function.

I also consider that the description of the horse-tails is incorrect. B.A. Litvinsky thinks that on the whole plate the horse-tail "is twisted in a braid at its base", while "on the fragmentary plate the tail of the right horse is twisted, and that of the left is tied up and finishes with a small bow"[145]. As pointed out above, in contrast to what are, unfortunately, rather inaccurate drawings, the photographs in Litvinsky's article show very clearly that three of the four horses depicted on the two plates have covered tails (pl. VI: 1, 2).

It seems to me that all that is hanging from the belt of the Takht-i Sangin huntsman on the right is a bow-case, which — like the Orlat one — consists of several parts, while no sword sheath is visible. The huntsmen's only weapons are bows and arrows and in this respect they are just like Orlat hunters[146]. I do not really understand why attention is focussed on the position of the hands of the rider on the fragmented plate depicted in the pose of the so-called "Parthian shot". His bow is held "not in his right, but in his left hand"[147] merely because that would be the normal practice for any bowman, except a left-handed person.

Apparently by chance a dating of the Orlat plates to the 2nd-1st centuries BC has been attributed to me[148], although in the cited publication the reference was to the 1st-2nd centuries AD[149].

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[143] Mandelshtam, 1966, pp. 29, 114-115, pl. XLVI; Ilyasov, Rusanov, 1998, p. 109, pl. VI: 1, 2.

[144] Maslov, 1999, p. 225.

[145] Litvinsky, 2001, pp. 138, 143.

[146] B.A. Litvinsky writes about the scabbard: Ibid., p. 140, fig. 8. G.A. Pugachenkova also wrote about the sword of the Takht-i Sangin hunter: Pugachenkova, 1989, p. 102.

[147] Litvinsky, 2001, p. 143.

[148] Ibid., p. 146.

[149] Culture and Art, 1991, p. 176-178.

While supporting in general K. Tanabe's opinion that the depiction of the tassels on the plates reflects the influence of Sasanian royal iconography, B.A. Litvinsky correctly suggests that, judging from the Firuzabad rock-relief, tassels could have been included in the standard range of a Parthian warrior's accoutrements. Yet he does not claim this categorically, because the sculptor might have depicted these tassels "only as a sign of royal dignity familiar to Iranians"[150]. It will be recalled that the Firuzabad relief, dating from the first third of the 3rd century, depicts the victory of Ardashir I and Prince Shahpur over the last Parthian king Artabanus V and possibly his son (or Grand Vizier Darbendan)[151]. The horse of King Artabanus falling with its rider is decorated with one tassel. This fact demonstrated clearly that the Parthians used to decorate their horses with tassels. The sculptor has carefully depicted the corresponding signs (*nishan*), as well as the differences between the armour and weapons of the Parthians and Sasanians: their different-shaped helmets, the Parthians' coat of mail with a skirt consisting of scales or platelets and scale-armour sleeves and the Sasanians' smooth cuirasses worn over chain-mail. Unlike all the other riders, Artabanus has a quiver with two sections for arrows[152]. Such precision in details allows us to maintain that the tassel was a part of the real trappings of the Parthian ruler's horse and was not simply added as a whim of the sculptor[153]. Above, I have mentioned tassels that were depicted in Dura-Europos in the period immediately before the Sasanian conquest, when all Iranian features in the art of the city were a Parthian legacy[154]. It would be difficult to take the rider in Parthian costume, sitting on a be-tasselled horse and taking part in the worship of the Syrian god Iarhibol, for a Sasanian ruler or one of his relatives. It is also unclear what the reason was for imitating Sasanian models in a city which was still under Roman rule. As regards the mistakes in the depiction of tassels — allegedly resulting from a misunderstanding of their function[155], I find this argument somewhat speculative. If contemporary scholars have

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[150] Litvinsky, 2001, p. 151.

[151] Herrmann, 1969, p. 73; Gall, 1990a, p. 20-30, fig. 3, pls. 5-8.

[152] Gall, 1990a, p. 23.

[153] As G. Herrmann writes: "a 'balloon' flies up behind his (Artabanus' — J. I.) horse and we can therefore assume that the use both of devices and of balloons was common Parthian practice", see: Herrmann, 1969, p. 73.

[154] Goldman, Little, 1980, p. 297.

[155] Tanabe, 1990, p. 54, 56-57.

been able to understand the purpose of tassels, ancient artists (sculptors, engravers, etc.) would also have been able to understand this not very complex matter. Two tassels or only one, on which side it (or they) hung, whether they were "flying" as the horse galloped along or simply swinging sideways a little — all this apparently depended on the material which was used for making the tassels according to various traditions and the way they were used to adorn horses. Incidentally, it may well be that single tassels are depicted in the Sasanian graffiti at Persepolis. In any case, one of the riders depicted there has a tassel which is hanging on the side opposite the viewer, just as on the Takht-i Sangin plates[156]. We know of some cases when provincial craftsmen of the Sasanian period 'misunderstood' the 'flight' of tassels. Tassels are shown flying even when horses are not depicted bounding forward with the speed of wind, but reined in[157]. Tassels are depicted in pairs in all instances. The craftsman knew well what he was depicting, but possibly deliberately disregarded some of the laws of physics, so as to lend additional "royal" splendour to his compositions.

Returning to the article of B.A. Litvinsky, I must note that comparing the chains of phalerae, which decorate the cruppers of the Orlat horses, with the phalerae of the Sasanian horses[158] does not seems to me very convincing. In all the Sasanian depictions which I have seen in publications (rock-reliefs, toreutics, gems), phalerae decorate chest-straps and cruppers in virtually identical numbers. In usual profile depictions, for instance, one can see 2-4 phalerae on a chest-strap and haunch-strap (in the reliefs of Ardashir I, Shapur I and Varahran I from Naqsh-i Rustam, Darabgird, Naqsh-i Rajab and Bishapur[159], on one of the gems[160] and on a silver dish with Shapur II's hunt from the Hermitage Museum[161]). As I mentioned above, Orlat horses have phalerae only on haunch-straps, and the closest

[156] Calmeyer, 1976, Abb. 3.

[157] A dish from Kerchevo (Hermitage) with Kushanshah Varahran hunting boars, a dish from the British Museum with Varahran V during a lion-hunt and a dish from a private collection (New York) with Yezdigerd II defeating a bull. P.O. Harper linked those dishes together in group III: it seems that they were produced in provincial workshops (Merv?) of the 4th-5th centuries, see: Harper, Meyers, 1981, pp. 72-81, 136, pls. 23, 25, 26; Marschak, 1986, p. 428, figs. 6, 7, 9.

[158] Litvinsky, 2001, p. 152.

[159] Herrmann, 1969, figs. 4, 8, 10; Idem, 1980, text fig. 1; Idem, 1981, figs. 2, 3.

[160] Ghirshman, 1962, figs. 211, 295.

[161] Trever, Lukonin, 1987, p. 107, pl. 9.

parallel for these is provided by phalerae depicted on a Saksanokhur gold buckle dating from the 1st-2nd centuries[162].

The hair of the Takht-i Sangin hunters gathered in at the nape of the neck can be compared not just with Sasanian haircuts[163]: one can recall other examples, one on a gold plaque with a depiction of Scythian archers standing back to back as they shoot their arrows (Kul-Oba, 4th century BC)[164], the above-mentioned belt-buckles decorated with boar-hunting scenes from the Siberian collection to the Saksanokhur buckle and the so-called "anecdotal plaques" of the Hsiung-nu[165]. So we cannot be sure that "this detail of the coiffure expresses Sasanian influence"[166].

It should be noted that crenelated manes and scabbard slides are also to be found on the Orlat plates. There is only a crenelated mane on the Takht-i Sangin plates, because "hunting Bactrians" do not have any swords. It is not necessary to repeat O. Maenchen-Helfen's observations about the style of mane-trimming and its spread. It is, however, worth noting the opinion recently published by P. Bernard and K. Abdullaev to the effect that "special uncut long hanks of mane were used, probably for making jumping on to a horse easier. In any case, the rider on the Pazyryk carpet is holding on by just such a hank"[167]. It seems to me that a hank of mane really can help a horseman mount, but only if it was retained in the lower part of the mane (near the withers)[168]. Yet, a hank which is left untrimmed in the upper part of the neck, as in the case of one of the Takht-i Sangin horses, could hardly be of use here. This would apply even more to the crenelated manes of the Orlat horses taking part

[162] Ilyasov, Rusanov, 1998, p. 127; see also: Maslov, 1999, pp. 226, 227; Nikonorov, Khudiakov, 1999, p. 147.

[163] Litvinsky, 2001, pp. 153-154.

[164] Scythian Art, 1987, No. 199; Schiltz, 1994, p. 180, fig. 130.

[165] Bunker, 1978, pp. 124-125, pls. 3b, 4a; Maslov, 1999, p. 226.

[166] Litvinsky, 2001, p. 154.

[167] Bernard, Abdullaev, 1997, p. 81. It is not a new idea. A similar opinion about the Pazyryk depiction was expressed by F. Hancar in 1956 and was criticized by O. Maenchen-Helfen in 1957. The latter believed that the rider was holding an upside-down rhyton (Maenchen-Helfen, 1957, p. 126). J. Haskins, in his turn, wrote that the Pazyryk rider was holding a horse-reins (Haskins, 1961, p. 159). I consider the latter opinion to be correct.

[168] One can see similar hanks in the composition with the Amazon thrown from her horse on identical Scythian gold scabbards of the 4th century BC found in the Chertomlyk Barrow and the Elizavetino burial-ground, see: Scythian Art, 1987, No. 221; L'Or des Amazones, 2001, pp. 120-121, No. 88.

in battles and hunting[169]. These "juts" can be of no more help for climbing on to a horse, than, for instance, the horse's ear. A crenelated mane was a kind of decoration which arose as a distinctive sign and was connected with an ancient tradition of Central Asian (Yüeh-chih?) origin. O. Maenchen-Helfen has written about it in detail.

In our first article we devoted more attention to scabbard slides[170]. It is necessary, however, to return to some points here. B.A. Litvinsky considers that the nephrite scabbard slide from Barrow No. 2 at Orlat does not belong anywhere in the classification of Chinese scabbard slides: it was made outside China and was obviously not as old as the Chinese ones[171]. Yet in the book by W. Trousdale, a recognized specialist in this field, an undecorated scabbard slide was published, which had been made in some outlying region of China and dated back to the 2nd century BC. A number of undecorated nephrite scabbard slides exist which date from the Han period: W. Trousdale classifies them as belonging to the category of undecorated Chinese scabbard slides[172]. So, if a scabbard slide is undecorated, this alone does not give us grounds for a later dating. According to W. Trousdale, a very important feature for distinguishing authentic Han scabbard slides and later imitations are the proportions of the upper and lower hooks and the correlation of their height to the height of the central aperture. Without touching on details, since we have already written on this subject[173], it is as well to recall that the Orlat scabbard slide cannot be regarded as a late imitation, when it possesses these features. The 2nd-1st century BC scabbard slide from Tompak-asar (in the lower reaches of the Syr Darya) which was mentioned by B.A. Litvinsky and is undeniably a Chinese scabbard slide from the 1st/2nd-century AD burial at Roshava-Dragana (Bulgaria) which he did not mention, eloquently indicate that scabbard slides which are made

[169] The trapezoidal 'jut' decorating the mane of the Orlat hunter's horse in the upper register is very similar to those on the manes of two horses depicted on a gold pendant incrusted with turquoise from female burial No. 3 at Tillya-Tepe. These horse-protomes also have a long hank between the ears and are shown at an unusual 'three-quarter' angle, just like the mountain rams pursued by Orlat hunters, see: Baktrisches Gold, 1985, p. 246. pls. 40, 41. It should be recalled that in the same grave aureus of Tiberius which was minted between AD 16 and 21, was found, see: Koshelenko, Sarianidi, 1992, p. 23; Zeymal, 1999, p. 240.

[170] Ilyasov, Rusanov, 1998, pp. 117-118, 121-123, 126-127, pls. XIV-XVI.

[171] Litvinsky, 2001, p. 148.

[172] Trousdale, 1975, pp. 122-124, fig. 12, pl. 1a.

[173] Ilyasov, Rusanov, 1998, pp. 122-123.

within China or its borderlands started to reach Western Central Asia and territory even further West long before the 3rd century AD. B.A. Litvinsky has mentioned a fragment of a nephrite scabbard slide, which was found by A.V. Sedov in a level of the 3rd-4th (or 4th-5th) century at Ak-tepe (Southern Tajikistan)[174]. This fragment, however, is of no functional use and could have been preserved as a piece of a beautiful and rare mineral for as long as anyone pleased.

Some words concerning a "flying gallop" would be appropriate at this stage. After accepting H. von Gall's view that this motif is of Chinese origin and was adopted by Sasanian Iran via Central Asia, B.A. Litvinsky believes that the depictions of horses in a flying gallop on the Takht-i Sangin and Orlat plates might have appeared as the result of the influence of both Chinese and Sasanian prototypes. On the basis of certain details (unfortunately he does not specify which) B.A. Litvinsky opts for the Sasanian source[175]. The choice, however, is not a straightforward one. After studying the motif of the flying gallop, scholars came to the conclusion that two main varieties of this motif should be distinguished from each other. In one case the lower surface of the hind hooves of horses and other ungulate animals is turned upwards (upflipped hooves), while in the other this surface is perpendicular or at an angle of less than 90° to the ground surface (down-turned hooves). The first variety is associated with Han China and its nomadic neighbours, while the second can be seen on Graeco-Persian gems of "mixed style" (end of the 5th — beginning of the 4th century BC), on the frequently mentioned "Parthian" depictions from Dura-Europos and in Sasanian art[176]. From this point of view the flying gallop on the Orlat hunting plate and that on the Takht-i Sangin plate differ. On the Orlat plate the horse and all the pursued animals are represented in a "Chinese" upflipped gallop[177], while on the Takht-i Sangin plates the picture is more complex. Three of the four horses are depicted in an "Iranian" flying gallop with down-turned hooves, while the horse of the rider on the right and all the pursued animals on the intact plate are depicted in a

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174 Sedov, 1987, p. 59, pl. I: 5; Ilyasov, Rusanov, 1998, p. 121, pl. XVI: 1; Litvinsky, 2001, p. 148.

175 Litvinsky, 2001, p. 154-155.

176 Jaffe, 1983, pp. 187, figs. 9, 10, 13, 19, 22, 23, 28; Bunker, 1978, p. 123.

177 Maslov, 1999, p. 228.

"Chinese" gallop[178]. On the Orlat plate the hind legs of horses and pursued animals are shown apart, as in the Chinese depictions and on the Siberian belt-buckles with boar-hunting scenes. On the Takht-i Sangin plates the hind legs are together, one leg is almost hidden behind the other. The hind legs of animals were depicted in this way in Iran and early medieval Sogdiana[179], while in Syria both variants can be found[180]. A feature which sets apart the Takht-i Sangin depictions is that the forelegs of horses and most animals are close together, in contrast to the majority of depictions of the flying gallop, which show forelegs apart. Thus we evidently have a mixture of styles on the Takht-i Sangin plates. Without examining in detail the various opinions about the origin and the spread of the flying gallop motif[181], let us recall that its

[178] In the drawing (Litvinsky, 2001, p. 144, fig. 6) the hind hooves of this horse are shown incorrectly: the lower surface is nearly at right angles to the direction of movement. This detail is shown more correctly in the photograph, where «up-flipped hooves» can be seen (Litvinsky, 2001, p. 141, fig. 4).

[179] Sarre, 1925, pls. 86, 87; Albaum, 1975, figs. 17, 18, 20, pls. XXXV, XXXVI; Harper, Meyers, 1981, pls. 8-10, 14, 15, 17, 19, 22, 28, 30, 32, 37; Gall, 1990, fig. 4; Belenizki, 1980, pls. 26, 28, 34, 44, 45, 48; Marshak, Raspopova, 1992, p. 89. One Sasanian gem represents the image of a horse with hind legs apart (Harper, Meyers, 1981, p. 136, fig. 45).

[180] Goldman, 1999, pp. 22, 26, 32, 33, 35, 36, 37, 85.

[181] See: Rostovtzeff, 1935, pp. 288-293; Rostovtzeff, 1937, pp. 44-56; Jaffe, 1983, pp. 183-200. M.I. Rostovtzeff believed that for Chinese art the motif of the flying gallop was absolutely alien and appeared suddenly in the Han period. It was borrowed by the Chinese from northern nomads. I. Jaffe believes that the flying gallop appears in China earlier and illustrates this view with a bronze vessel from the 1st half of the 5th century BC. Yet, her examples do not convince me. Note should be taken of the findings from the 1st Pazyryk Barrow. These include a wooden mouth guard in the shape of a wild ram and stag, depicted in a pose different from a classical flying gallop only as regards the position of the forelegs. These are bent, and not thrown forward (Griaznov, 1950, pp. 31, 34, figs. 9, 12, pls. IX, XIV: 1; see also: Jettmar, 1964, fig. 89; Schiltz, 1994, fig. 25). Nevertheless, this did not prevent M.P. Griaznov from writing about "figures in flying gallop" (Griaznov, Golomshtok, 1933, p. 41). The hind legs of these animals are in the "classical Chinese" up-flipped position. The same is also true for the running wild rams tattooed on the right leg of the chieftain from the 2nd Pazyryk Barrow (Rudenko, 1961, fig. 22). Finally, we should recall the Siberian belt-buckles with the boar-hunt. All these materials precede the Han period, to which belong not hypothetical but real examples of the Chinese flying gallop motif. Despite all efforts to bring forward the date of the Pazyryk barrows, even the latest of them (Barrows 3, 5 and 6) are given a date no later than the end of the 4th — beginning or middle of the 3rd century BC (Lerner, 1991, p. 12; Kawami, 1991, pp. 18-19; Bunker, 1991, p. 23; Juliano, 1991, pp. 25, 28, Rubinson, 1992, pp. 68-76). This fact testifies in favour of Rostovtzeff's theory and the motif might be borrowed by the Chinese together with other nomadic innovations. The sword of the hunter on the Siberian buckle (pl. II: 1) looks very

appearance in Sasanian art is linked by H. von Gall with the borrowing of the Chinese motif by way of Central Asia[182]. The mixed nature of the flying gallop as depicted on the Takht-i Sangin plates does not enable us to see an unquestionable Sasanian influence here. These depictions show us rather the process of the motif's transformation on its way from China — through West Central Asia — to Iran.

Let me sum up my extensive digression into the history of the study and interpretation of the Orlat and Takht-i Sangin plates. I believe that dating them to the 3rd - 4th century — or to be precise the 3rd century — on the basis of comparisons with Sasanian iconography, has no reliable foundation. Above I have tried to point this out with reference to various archaeological materials and iconography. In order to confirm this conclusion I want to compare Orlat and Takht-i Sangin depictions with Sasanian depictions once more:

1. There is little similarity between the lean Orlat horses and monumental heavy Sasanian ones.
2. The Sasanian flying gallop differs from the flying gallop of Orlat and, to some extent, that of Takht- Sangin.
3. I have not found any Sasanian depiction of mouth guards (cheek bars or psalia) with two disc-shaped ends like those depicted on the Takht-i Sangin and Orlat hunting plates[183]. At the same time, similar mouth

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Chinese because it has a typical guard and chape (on this basis E. Bunker considers these belt-buckles to have been made in North Chinese workshops of the Han era, see: Bunker, 1993, p. 109). Yet this does not mean that the sword definitely belongs to the Han period and cannot be of earlier date — trapezoidal chapes can be found in depictions of the Late Chou period (Trousdale, 1975, p. 40, fig. 20). It should also be noted that not everyone agrees with Bunker's view that the "lost wax and lost textile" casting technique and accordingly, the production of plates from the Siberian Collection, were the work of Chinese artisans (see: Horvath, 1995, pp. 78-96). This image would appear to illustrate very well the theory according to which the long sword was borrowed by the Chinese from northern nomads, acquired a Chinese design (guard of the traditional Chou shape, nephrite scabbard slide and chape) and then, in this "sinicized" form, was readopted by nomads, and spread in the end as far as Europe (Trousdale, 1975, pp. 69, 117-119). It is to be supposed that the century between 307 and 206 BC was enough time for such transformations.

[182] Gall, 1990, pp. 81-87.

[183] See, for instance, "the standard Sasanian bridle" of the 3rd century in: Herrmann, 1980, p. 38, text fig. 3; see also: Herrmann, 1989, pp. 757-809. Only one Orlat battle-horse has a so-called "propeller-shaped" psalia, typical for Sasanian depictions. Yet, such mouth guards are depicted on the 1st century AD silver vessel from Kosika Barrow: they were also found in Ai-Khanum and in the 1st century AD layer at Sirkap (see: Treister, 1994, pp. 189-190, fig. 7; Idem, 1997, pp. 61-62). On the Orlat psalia see also: Nikonorov, Khudiakov, 1999, p. 147; Maslov, 1999, p. 226.

guards from wood have been found in the Pazyryk, they are shown on the Siberian buckle with a boar-hunt and, finally, the iron mouth guards with disc-shaped ends decorated with gold and stones were found in the Shaushukum burial-ground (South Kazakhstan) and in Sarmatian (Aorsian? Alanian?) burials of the 1st-2nd centuries AD (Zaporozhskii, Sadovyi, Dachi, Barrow No. 10 at Kobiakovo)[184].

4. Usually browband discs of the Sasanian horses were decorated with ribbons, and not with tassels like the Orlat horses. A few exceptions have been recorded, as follows: cameo of the 3rd (or 4th) century with a depiction of Shapur I and Valerian (or Shapur II and Iovian) from the collection of the Bibliothèque Nationale (Cabinet des Médailles) in Paris, and also rock-reliefs — Naqsh-i Rustam 3 and 7. All these cheek-tassels differ in shape from the Orlat ones[185]. Cheek-tassels of a pointed shape similar to the latter are depicted on Siberian and Ordos belt-buckles.

5. Tassels which are attached to the saddle on the Orlat and Takht-i Sangin plates are not double tassels like Sasanian ones, but single.

6. The phalerae of Sasanian horses are symmetrical, while Orlat horses have phalerae only on cruppers.

7. Sasanian horses do not have tail-covers.

8. There are no fluttering ribbons — so popular in Sasanian art — in the Orlat and Takht-i Sangin depictions.

9. There are no wide folded trousers as worn by Sasanian riders.

10. The armour of the Orlat warriors differs markedly from early (Firuzabad relief), as well as from late (Taq-i Bustan) Sasanian armour.

11. Royal Sasanian hunters, even if they pursued herbivorous animals, were always equipped with a sword as well as a bow; Orlat and Takht-i Sangin hunters do not carry swords.

12. Swords in early Sasanian depictions are different from Orlat ones, although they were carried on a scabbard slide; they have a different shape of guard[186] and chape, not like the “sinicized” swords of the Orlat

[184] Griaznov, 1950, fig. 14, pl. XVIII: 5; Rudenko, 1953, pl. 66; Shilov, 1983, p. 184, fig. 7; Bespaly, 1992, p. 180, fig. 4; Guguev, 1992, pp. 101-114, fig. 3; Ilyasov, Rusanov, 1998, pp. 135; Maslov, 1999, p. 226; L’Or des Amazones, 2001, pp. 200, 206, Nos. 225, 231.

[185] Ghirshman, 1962, fig. 195; Gall, 1990, p. 33, fig. 4: a, d, p. 56-59, pl. 19.

[186] One can find depictions of guards of simplified Chinese (or “sinicized”) shape on the Kushan sculpture (statue of Kanishka I, Gandharan reliefs) (Rosenfield, 1967, fig. 2a; Trousdale, 1975, figs. 46, 50, 55, 56; Mode, 1997, figs. 2, 4a), and also on Palmyrean

horsemen: mushroom-shaped pommels are only rarely encountered[187]. Sasanian swords are the result of the evolution of the Orlat type swords.

This list of differences should demonstrate fairly convincingly that it would be a profound mistake to discern Sasanian influence in the Orlat and Takht-i Sangin depictions or to base arguments for their dating on such an influence. I do not see any specifically Sasanian features here. I have noted on more than one occasion that the Orlat depictions were executed with scrupulous care. The engraver knew exactly what he was depicting and reproduced all the details very precisely — as far as the miniature size and technical potential of his tools allowed him to do so, of course. My favourite example of an engraver's precision is the following: the sword-guards which are depicted on the plate with a battle scene and the nephrite guard which was found in the burial together with bone plates are of the same shape. Now we have some new materials available to confirm the engraver's accuracy. Describing the bow-cases of the Orlat riders we wrote that they consisted of four parts (not three, as many scholars had assumed). Besides two sections for arrows of different lengths and a section for a battle-ready bow, there is another section which was probably used for carrying a bow without a bow-string (in a discharged state)[188]. We paid attention to the specific shape of the bottom part of this fourth section, which can be clearly seen on the Orlat battle-scene plate. Recently published findings of the Chinese-Japanese joint expedition at Niya (Xinjiang) confirm the high degree of accuracy in the Orlat depictions. In the double burial M8 of the 95MNI necropolis (owing to the dryness of climate) a bow-case very similar to the Orlat ones was found. It has two leather cylindrical sections for arrows of different lengths (one of these sections also has a cylindrical lid fastened on by a small leather strap), a leather bow-case and a figured detail made from some hard material (lacquered leather or wood?) which protrudes at

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sculpture, many features of which can be traced back to the Parthians (Ghirshman, 1962, fig. 91; Trousdale, 1975, fig. 66). This can easily be explained with reference, firstly to the nomadic origin of both the Parthian and Kushan dynasties and, secondly, to their proximity to and interaction with Central Asian nomads. Obviously not all their ties and traditions were inherited by the Sasanians.

187 Overlaet, 1989, pp. 741-755; Masia, 2000, pp. 188-194, 196-200, figs. 2, 9, pls. 1, 9.

188 Ilyasov, Rusanov, 1998, p. 121. V.P. Nikonorov and Y.S. Khudiakov came to the same conclusion: "on the inside of the saadaks (i.e. gorytus. — J.I.) ridges protrude top and bottom. Perhaps, this is a second 'compartment' in which an unstrung bow was placed", see: Nikonorov, Khudiakov, 1999, p. 144.

the bottom[189]. The latter precisely echoes the shape of the parts of the Orlat bow-case[190] (pl. X: 3, 4). So, we can with ample justification state that the engraver had depicted on the Orlat plates things which were well-known to him, moreover to a very precise degree. Conversely, we have no grounds for assuming that single flying tassels depicted by him were copied from some Sasanian model or based on hearsay. On a Hephthalite silver bowl from the British Museum features of Sasanian iconography (which was the main source for the style of Hephthalite art) are clearly visible. We find crowns and ribbons, monumental horses and double tassels[191]. It is worth repeating that none of these features are to be found on the engraved plates.

A silver vessel from the Kosika Barrow (stylistically this would appear to be the work of a nomad craftsman) shows that pictorial compositions combining battle and hunt scenes on one object were typical in the 1st century AD for Sarmatians (Alans?)[192]. Plates from the Orlat burial-ground demonstrate a similar combination of the two subjects. On the plates these subjects occupied the left and right parts of a belt set, while on the vessel they are divided between the upper and lower registers[193]. Taking into account that hunting and war were the most honourable occupations of nomads, it is possible to contemplate the purpose and ideological implications of such subjects[194]. The date — 2nd-3rd century AD — proposed by

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[189] Excavation, 2000, figs. 25, 28. Burial M8 was preliminarily dated within the wide limits of the Han — Jin periods, "but not later than the Former Liang dynasty" (i.e. between 206 BC and AD 316-376).

[190] Ibid., p. 40. In the Burial M8 an asymmetrical bow was found which is similar to Orlat bows. However arrows are different — they have flat and diamond-shaped heads. The scabbard of one of the daggers found in this burial was also reminiscent of the depiction of a dagger or knife fastened to the left hip of one of the Orlat warriors (Ibid., figs. 27, 31).

[191] Harper, Meyers, 1981, p. 129, fig. 44; Marschak, 1986, pp. 29-30, 32-34, fig. 14.

[192] Dvornichenko, Fedorov-Davydov, 1993, pp. 148-150, fig. 5; Treister, 1994, pp. 179-184, figs. 1, 7-11; Idem, 1997, pp. 58-62, figs. 24, 28-32.

[193] Yatsenko, 1992, p. 80.

[194] Marshak, 1992, pp. 208-211; Treister, 1994, pp. 172, 199; Ilyasov, Rusanov, 1998, p. 115; Maslov, 1999, p. 229; Yatsenko, 2000, pp. 86-104. B.A. Litvinsky believed that the real hunting life of the Bactrian nobility was depicted on the Takhti-Sangin plates. He noted very precisely that the animals depicted on the intact plate live in the mountainous regions of Bactria and that the stag-hunt depicted on the fragment of the second plate occurred in some another locality (Litvinsky, 2001, p. 156, 160). On the Orlat hunting-plate riders are pursuing two mountain sheep or *argali*, three *kulan*s, two stags and a doe (judging by the shape of the large branched antlers they are Bukharan red deer and not roe

H. von Gall for the Kosika vessel, is actually based merely on the assertion that the arrangement of the "pursuit scheme" was a characteristic feature only for Sasanian art of the 3rd century[195]. Let us recall that the Kosika Barrow was dated to the 1st century AD on the basis of the whole range of finds[196], and we should also note the following: a composition representing a "pursuit scheme" has been depicted on the gold object from the Siberian collection of Peter the Great and on the Khalchayan relief, as accurately noted by P. Bernard and K. Abdullaev, who suggested that the origin of composition in which pursuit on horseback is depicted should be sought in the art of the steppe peoples[197]. A composition of this kind is also to be found in Han China: on an engraved plate from Sunjiacun (upper register) and on the eastern wall of the Xiao Tang Shan Shrine (90-120 AD), where we find, among others, scenes with a rider striking another rider with a lance, who falls from his horse with his arms and legs flung wide[198]. If the flying gallop, as H. von Gall suggested[199], was introduced to Central Asia in the Han era and was not borrowed by Sasanian Persia before the 3rd century, the composition depicting a "pursuit scheme" could have passed down the same route, reaching Sarmatian lands as early as the 1st century AD.

We would suggest that the Orlat and Takht-i Sangin plates should be dated to a pre-Sasanian period, most probably to the 1st-2nd centuries AD. It should also be noted that besides the undeniable similarity between these plates (material, technique, function, subject, realia), there are also some differences. These differences are not the result of chronological factors, but can be explained by the differences between the regions and peoples

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deer, as G.A. Pugachekova suggested). In Western Central Asia these animals represent three different geographical zones: mountains and hills (wild sheep), steppes and semi-deserts (*kulan*s), flood-land forests or *tuqai* (deer). It is obvious that in reality it was difficult to chase such different animals at the same time. Either each rider is in the appropriate locality and is pursuing animals which are common to this locality, or the hunt takes place within the confines of some special landscape with a rich variety of animals. In both cases this scene cannot be regarded as a straightforward depiction of real life. It is a «magic hunt» (Yatsenko, 2000, pp. 89-90).

195 Gall, 1997, p. 179.

196 Dvornichenko, Fedorov-Davydov, 1993, p. 178; Treister, 1994, pp. 197-198; Vinogradov, 1994, pp. 156-163; Shchukin, 1995, pp. 178-179; Treister, 1997, pp. 70-74.

197 Bernard, Abdullaev, 1997, pp. 69-70.

198 Pirazzoli-t'Serstevens, 1982, pp. 169, 170, figs. 94, 96; James, 1988/89, p. 40, fig. 2.

199 There is the picture from Xiao Tang Shan in his monograph, see: Gall, 1990, pl. 23: b.

from which the plates stemmed. While the Orlat ones reflect the spirit and style of the art of nomads, who once inhabited the steppe and piedmont regions in the north of Sogdiana, the Takht-i Sangin plates relate to the culture of the already settled Yüeh-chih — Tocharians. I cannot agree with V.E. Maslov, when he writes, following in the footsteps of G.A. Pugachenkova, that the Orlat plates were made "in one of the urban centres"[200]. The manner, all the stylistic features and objects depicted on these plates are what has come to be associated with the art of nomads. This nomadic spirit could not be felt so deeply and conveyed with such precision by some urban craftsman (no matter how skilful he was). This was well understood by B.I. Marshak, who emphasized that the Orlat plates "reflect not a local, but a Central-Asian artistic tradition of nomads"[201]. Concerning the Takht-i Sangin plates, I think that here we indeed have the work of an urban craftsman, who had worked for nomads (actually speaking, for former nomads). Hence the artistic features so sensitively discerned by B.A. Litvinsky: "the sharp contrast between the vivid and very precise treatment of the movements of the animals… and… the figures of the riders… depicted rigidly as if they were sitting not on galloping horses, but on immovable thrones"[202]. Hence the heavy and realistic rendering of the Takht-i Sangin horses, which differed radically from the hyper-elongated proportions of the Orlat ones. Hence also the inescapable formalism reflected in the depiction of the bow-cases and tassels. The former are sometimes on the right and sometimes on the left side of the riders galloping in opposite directions. This means that the artist was aiming to show the bow-case on the side facing the beholder, regardless of how it was actually worn. Tassels, on the other hand, are always shown on the side furthest from the beholder irrespective of the direction in which the rider

[200] Pugachenkova, 1989, p. 109; Maslov, 1999, p. 229.

[201] Marshak, 1987, p. 235. Yet it should be noted that this tradition was inherited by Sogdian art. So, in the earliest known Sogdian wall-paintings from Jartepa (4th — the beginning of the 5th century) and also in early paintings from Penjikent (6th century) we find an artistic technique typical for Orlat depictions. In other words, in scenes of hunting on horseback the rapid movement of horses is emphasized by deliberate distortion of their bodies — natural proportions are not observed and they are significantly elongated, which stands out particularly clearly in the Penjikent paintings (Berdimuradov, Samibaev, Grenet, Marshak, 2001, pp. 63-64, fig. 4; Marshak, Raspopova, 1992, p. 84, fig. 6; Marshak, 1996, fig. 1). In numerous Sasanian, as well as later Sogdian hunting scenes distortion of this kind is not found (Marshak, Raspopova, 1992, p. 84; Marshak, 1996, fig. 3).

[202] Litvinsky, 2001, pp. 141-142.

is moving[203]. In reality, the way weapons are worn and positioned was a question of comfort and rationality and was quite definite (although it could have varied depending upon the period and territory)[204]. It seems to me that the difference between the somewhat naïve and exaggeratedly expressive style of the Orlat depictions and the refined and reserved style of the Takht-i Sangin engravings reflects the difference between the nomad and the urban "sedentary" artistic styles (or, in this concrete case, between the art of real nomads and that of settled nomads). It would seem that this difference might be extrapolated to the almost unknown art of K'ang-chü, on the one hand, and, on the other, to that of the neighbouring Kushan Empire, which, in contrast, is known from countless examples. While the former is described in Chinese sources as a "nomad state with customs similar to those of the Ta Yüeh-chih and Yen-ts'ai", the latter by the 1st-2nd centuries AD embraced Bactria and India and was hardly reminiscent of a "nomad state" any more. Yet some rudiments of the nomadic style of art, as well as some objects of material culture (weapons, clothes) and some traditions (for instance, decorative covers for horse-tails) were still retained in Kushan state. The resemblance between Takht-i Sangin figures and the so-called "relatives and successors of Heraios" from Khalchayan was first noted by G.A. Pugachenkova and acknowledged by B.A. Litvinsky who wrote that "the resemblance actually exists, but it is rather of a general, that is to say of a tribal character, and is connected… with the representation of a narrow ethnic type"[205]. It seems to me that this resemblance allows us to call the Takht-i Sangin motif not "Bactrians out hunting", but "Tocharians (or Yüeh-chihs) out hunting", bearing in mind that the physical type of actual Bactrians would be slightly different[206].

In the Orlat depictions we have a combination of Iranian (in the broad sense of the word) art with very strong elements of the Chinese art of the Han epoch. Where and when could the fusion have taken place of all these

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203 If we assume, like K. Tanabe, that the artisan always showed the tassel on the side furthest from the beholder, because he did not know precisely, where and how it should have been attached (Tanabe, 1990, p. 56-57), we must assume that the artisan was also unaware as to the side on which a bow-case should be carried: yet this would seem highly unlikely.

204 It is precisely in this way — with careful observation of all nuances regarding the arrangement of accoutrements that the Orlat warriors and boar-hunters (Siberian collection) are depicted.

205 Litvinsky, 2001, p. 153.

206 As G.A. Pugachenkova had already done in her article «Obrazy yuedzhiytsev i kanguytsev v iskusstve Baktrii i Sogda» (Pugachenkova, 1989a, pp. 101-103).

features, which are so harmoniously depicted on the plates? I suggest that such a synthesis of art forms reflects the complicated political and ethnic processes at work within the territory of K'ang-chü from the second half of the 1st century BC. The bearers of the ancient culture of the Iranian-speaking nomads — the K'ang-chü, whom we — like B.A. Litvinsky — regard as the descendants of the Sakas[207], have, to all appearances, at one time or another been subjected to a strong influence from the Hsiung-nu and Wu-sun, who were, in their turn, subjected to the extremely strong influence of the Han Empire. Chinese sources have preserved some information about events which took place in the third quarter of the 1st century BC and at the beginning of the 1st century AD. I mean the activities of the Chih-chih (Jïjï) Shan-yü of Hsiung-nu, who found refuge and help in the territory of their ally the K'ang-chü in the fight against the Wu-sun. Despite the small number of warriors who succeeded in reaching the land of the K'ang-chü through a snow-storm — only 3000 horsemen — the Hsiung-nu played a really active part in the internal affairs of the K'ang-chü. Chih-chih Shan-yü and the ruler of K'ang-chü made a treaty with one another and each married the other's daughter in order to make this treaty more binding. Shan-yü built a fortified capital in the eastern part of K'ang-chü (it is assumed to have been on the Talas River), in which he was crushed and decapitated by the Chinese in 36 BC[208]. Furthermore, there is information about the resettlement of an 80,000-strong horde of Wu-sun to K'ang-chü in 11 BC, led by their rebelling prince, who was killed by the Chinese (who had supported his brother) in 3 AD [209]. Such typical objects of Chinese (or "sinicized") weaponry, as well as elements of Han iconography (namely, "Chinese" swords, the Chinese variant of the flying gallop, special features in the depiction of horses and *kulan*s noted by V.E. Maslov: a ridge across the eyes to emphasize them, a curved muzzle, pricked ears, etc.)[210], could have

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[207] Litvinsky, 1967, p. 33; Idem, 1968, pp. 14, 109. L. Torday thinks that K'ang-chü of Chinese sources and Asioi/Asiani (a 'Scythian' folk) of Strabo and Trogus "have to be the same people, in spite of the different names by which they were known in the west and east", see: Torday, 1997, pp. 308, 360, 387.

[208] McGovern, 1939, pp. 185-196; Dubs, 1946, pp. 45-50; Gumiliov, 1998, pp. 328-334; Hulsewé, Loewe, 1979, pp. 47, 126; Torday, 1997, pp. 301-305.

[209] Bichurin, 1950, p. 198; Gumiliov, 1998a, p. 190; Yatsenko, 1993, p. 68.

[210] Probably, one more similarity with Chinese stylistic features is the resemblance between the "stretched like a string" Orlat hunting-horses and the "hook-nosed" horses spread flat in the air from certain painted pottery vessels of the Early Han period, see: The Tsui Museum of Art, 1993, pl. 11; see also: Sturman, 1988, p. 56, fig. 1a; The Splendor

made their way into K'ang-chü territory just in the course of these events and after a certain time have been superimposed on the earlier Saka base (a generally non-Mongoloid appearance of the warriors and hunters[211], Saka armour[212], covered horse-tails)[213]. The result of this synthesis we find in the depictions discovered in one of the barrows near the northern border of Sogdiana. V.E. Maslov also agrees that the symbiosis of Iranian and Han art, which is reflected in the Orlat plates, could have happened within the territory of Sogdiana[214]. Not all scholars agree that Sogdiana was once part of K'ang-chü[215]. It should, however, be noted that the Orlat burial-ground was

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of Ancient China, 1994, No. 26; Kaikodo, 1996, pp. 152-153, 241-243, No. 69. It would seem impossible to connect elements of Chinese iconography with the Yüeh-chih invasion of Western Central Asia in the 2nd c. BC, because they are not depicted at all in the early Yüeh-chih period. The first undeniably Chinese features, like depictions of a dragon and chariots of a Chinese type appear on objects from the Tillya-Tepe necropolis, which is dated no later (and, in all probability, no earlier!) than the 1st century AD (see: Zeymal, 1999, pp. 242-243).

[211] It should be noted that the outward appearance of the Orlat figures gives rise to widely differing interpretations. According to G.A. Pugachenkova, "there are no Mongoloid features visible in the faces", while V.E. Maslov held that the "outward appearance of the Orlat warriors should not be regarded as of a definitely European type". "Their eyes which are emphasized by lines on both sides, may belong to representatives of a mixed racial type" (Pugachenkova, 1989a, p. 108; Maslov, 1999, pp. 225-226). The latter conclusion seems to me more valid — for example, as early as the 7th-6th century BC the Saka tribes living near the Aral Sea definitely exhibited some Mongoloid characteristics (Yablonsky, 1986, p. 52; Idem, 1998, pp. 39, 41, 44-45). What is important is that both authors (in my opinion, quite correctly) have compared the Orlat warriors and huntsmen with portraits of rulers on the Sogdian coins of the first centuries AD: so-called «coins of Hyrkodes» (Pugachenkova, 1989a, p. 108; Maslov, 1999, p. 225; cf.: Mitchiner, 1976, pp. 436-438, types 669, 670, 671, 675, 676).

[212] Gorelik, 1987, pp. 110-133, figs. 2, 3.

[213] In an article by P. Bernard and K. Abdullaev it is suggested that "the bearers of the culture of the Orlat burial ground" might be called Yüeh-chih (Bernard, Abdullaev, 1997, p. 84). Yet, when we compare Orlat and Khalchayan depictions it is easy to see that the Orlat warriors resemble more closely not Khalchayan's lightly armed Yüeh-chih archers, but the heavily armed warriors from Kalchayan designated as Saka by the same authors (in my opinion, quite correctly; according to G.A. Pugachenkova these Khalchayan warriors were Bactrians). The following fact also prevents us from regarding the Orlat figures as Yüeh-chih. We know that the Orlat plates were found in a barrow with a catacomb of the so-called Liavandak type. Yet among the hundreds of barrows of the 2nd century BC — 2nd century AD excavated in Northern Bactria-Tokharistan, which can be linked with the Yüeh-chih, not a single catacomb has been found (of either the Liavandak or the Kenkol type).

[214] Maslov, 1999, p. 229.

[215] See: Vainberg, 1999, pp. 268, 276, 282. The opinion that Sogdiana was part of K'ang-chü seems to me more convincing, see: Litvinsky, 1968, pp. 14-23; Gabuyev, 1999, pp. 99-116.

separated from the vast steppe lands incorporating the middle and the lower reaches of the Syr Darya (no-one would appear to question that these territories were part of the K'ang-chü State[216]) only by the low Nurata Range. The city-site of Kurgan-Tepe in its foothills (*adyr*), occupied by barrows of the Orlat burial-ground, was very likely one of the extreme northern Sogdian outposts, intended both to deter the military activity of nomads and for trading with them. The traditional inclusion of these lands in the sphere of nomad culture is confirmed by the fact that this area is still settled today by descendants of the nomad Uzbek tribes[217]. In the last centuries BC and the first centuries AD this territory was undoubtedly part of K'ang-chü (or was very much under its influence), the most powerful nomad state in this part of Central Asia[218]. I am totally in agreement with G.A. Pugachenkova regarding her definition — "image of the K'ang-chüs" — and I would only wish to amend her dating slightly in favour of the 1st-2nd centuries AD.

Now for a few words about the archaeological context of the Takht-i Sangin plates. Judging by the fundamental publication of the results obtained from the excavation of the Oxus Temple, the final stage of its functioning falls in the Kushan period. The plates were found in a cluster of cultic objects (No. 3) located on the second floor in Corridor No. 2, at a level 22 and 25 cms above the virgin soil[219]. It seems to me that the data about the stratigraphy of Corridor No. 2, as well as the whole temple, demonstrates sufficiently clearly that "the following 2 metres of layers (above floors 1 and 1a. — J.I.) should be linked with the Yüeh-chih period and to the heyday of the Kushan period — the reign of Kanishka and Huvishka"[220]. The total range of the finds of cultic articles in Cluster No. 3, as well as finds of Kushan pottery in Corridor No. 2 — at a level 60 cms above the virgin soil and in the in-fill of the last construction period also point to this date. Further evidence is the fact that among the 379 coins

[216] Vainberg, 1999, pp. 268, 282.

[217] In the region in question this is reflected in the names of some settlements, for instance Orlat (more correct would be Arlat), Barlas, Mitan, Alchin, etc., see: Sultanov, 1977, pp. 166, 171, 172, 174; Pugachenkova, 1989, p. 187.

[218] See materials from the Bulakbashi site which belongs to the Kaunchi archaeological culture and was found in the Koshrabad district: Pugachenkova, 1989, pp. 107-120. The Orlat burial-ground is also situated in this district.

[219] Litvinsky, Pichikian, 2000, pp. 83-86; Litvinsky, 2001, pp. 142, 144 (here Corridor No. 3 is incorrectly indicated).

[220] Litvinsky, Pichikian, 2000, p. 97.

found in the course of excavations at the Oxus Temple not a single Sasanian or Kushano-Sasanian coin was found[221]. This was noted as early as 1990 by K. Tanabe[222]. As A.P. Kerzum and P.P. Kerzum write, the final stage in the development of the temple complex is represented by two small shrines built on the ruins of the temple and dating back to the late Kushan period according to the pottery finds. These shrines, as well as other architectural remains of the temple, "were damaged by pits sunk from the level of the modern ground-surface, which contained material clearly stemming from the Kushano-Sasanian period. These pits represent the final chapter in the history of Takht-i Sangin"[223]. Since the plates were not found in these late pits, it can be said with certainty that Sasanian influence on the Takht-i Sangin depictions is impossible, as I have tried to demonstrate above through analysis of the iconography. Judging by the find-spot, the Takht-i Sangin plates were an offering brought to the temple (which would be quite logical in the case of a ceremonial belt) no later than the Kushan period.

Conclusion

It now remains for me to conclude my investigation. Tassels which are "flying" as result of the rapid movement of horses might have appeared during the evolution of decorative apparel for nomads' horses[224]. It is quite possible that they were originally tails of wolves, foxes (or even yaks, as P. Ackermann has suggested[225]) and that they decorated not only harness but also the clothes of nomads. Tassels made from dyed horsehair had already been used in the Pazyryk complex.

A survey of depictions of horses decorated with tassels attached to their saddles shows that they should be divided into two categories: tassels hanging from short cords (Ordos, Orlat, Dura-Europos) and from long cords (China, Takht-i Sangin, Dura-Europos, Sasanian Iran). The following conclusions can be drawn:

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221 Litvinsky, Pichikian, 2000, pp. 81, 83-86, 182, 183; Zeymal, 2000, pp. 393-404.

222 Tanabe, 1990, p. 55.

223 Kerzum A., Kerzum P., 2000, pp. 36-37.

224 The emergence of the tassel might have been called forth by intrinsically practical considerations. Using the tassel (which was made, for instance, from horsehair) as a fan to drive away persistent insects should not be omitted from the list (see note 55). In this case one tassel would have been enough.

225 Ackermann, 1936, p. 197.

1) tassels which decorated horses were depicted in the art of nomads and in China long before the Sasanian era;

2) double tassels flying behind the rider were represented most clearly of all in Sasanian art.

Yet variants of the latter category can be found among pictures (dipinti) from Dura-Europos. They were depicted within the space of two decades after the fall of the Parthian Empire, but before the Sasanian conquest of the city[226]. It was a period of Roman rule, when all Iranian motifs in the Syrian borderlands of Rome and Iran derived only from Parthian sources. As B. Goldman writes: "The cavalier in the Iarhibol drawing shows other details of Parthian style that moved from Roman Syria into Sasanian Iran. The plates on the harness straps and the large tassels on chains drawn elsewhere at Dura were continued in use in Sasanian Iran"[227]. These materials do not allow us to maintain that flying tassels were an innovation of the emergent Sasanian iconography. What can, on the other hand, be established is that this motif was borrowed very early by the Sasanians and became an almost obligatory element in the ceremonial portrayal of Royal Sasanian riders. Examples of the Sasanian variant of this motif on non-Sasanian objects are found on the Hephthalite silver bowl from the British Museum collection, on the Tocharistanian silver jug of the 6th-7th century from Yuldus Village and on an early-Islamic silver bowl with a depiction of a king striking lions with a spear (probably made in a Merv workshop during the years 806-817, as suggested by B.I. Marshak)[228].

The examples illustrating the use of tail-covers which I have examined above show us how this custom spread from the Altai Mountains (where it was known from the 4th-3rd centuries BC) and China to the Eastern Crimea and Western Parthia, from Northern Sogdiana to the lands of the Indo-Scythian dynasty of Azes and the Kushan Empire. This territory coincides with the region inhabited by mainly Iranian-speaking nomad tribes whose power extended over a number of settled states in the 3rd and 2nd centuries BC. The exception is China: however this custom had already been adopted there, possibly, at the end of the 4th century BC (or later) together with other elements of nomad equipment and clothes, namely harness, the

226 Goldman, 1985, p. 291.

227 Ibid., p. 292.

228 Shliakhova, 1978, p. 291, fig. 1; Harper, Meyers, 1981, p. 129, fig. 44; Marschak, 1986, pp. 29-30, 32-34, 84, 275-276, figs. 14, 29, 31, 192.

long sword, scabbard slide, leather belt and hook, trousers[229]. With the exception of the unique conditions obtaining in Pazyryk, in all other cases we only have images of tail-covers, which have been described above. The earliest of them are evidently objects from the Siberian collection of Peter the Great (4th-3rd centuries BC), while the latest are, most likely, Dura-Europos depictions which determine the period during which Parthian artistic traditions and, apparently, certain realia were retained under Roman rule (which lasted until AD 256). We can conclude that unlike the crenelated mane and scabbard slide which originated, in all probability, from the same source, tail-covers existed over a short period and disappeared at the time the Sasanian Empire was taking shape. It can be assumed that this practice was found alien or unacceptable for the new emergent style of official Sasanian art, which have borrowed the crenelated mane and the use of tassels. The annihilation of the Parthian Empire and the crushing of the Kushan Empire by Sasanians in the 3rd century, as well the subsequent destruction of the old Saka—Yüeh-chih traditions under the onslaught of Chionites and Hephthalites led to the disappearance of the custom examined here, from Central Asia and other regions in which it had formerly been found. At any rate, depictions of tail-covers from the 4th-5th century and later are unknown to me[230]. There is no conclusive answer to the question concerning the ethnic origin of those who introduced and spread this tradition of tail-covering. I can only put forward some suggestions.

Judging by the fact that the earliest tail-covers were found together with other features of ritual horse-decoration, like masks and mane-covers, we can assume that finds from the 1st Pazyryk Barrow establish the emergence and development of this custom. It gives us grounds for regarding as its inventors and propagators the tribe (tribes?) which left behind Pazyryk Barrows. These barrows are variously attributed to the Scythians, Yüeh-chihs, Massagetae (Greater Getae), Wu-suns, Hsiung-nu and the Arimaspians of Aristeas[231]. It is obvious that the racial composition of the nomad hordes, which in the 7th-2nd centuries BC lived in the lands between

[229] Rostovtzeff, 1929, pp. 79-81; Maenchen-Helfen, 1957, pp. 99-100.

[230] Judging by numerous terracotta statues of the periods of Northern Wei and Tang, in China also tail-covers were not used after the Han epoch.

[231] Rudenko, 1960, p. 176; Diyarbekirli, 1972; Haskins, 1988, pp. 7-8; Linduff, 1997, p. 74; Mallory, Mair, 2000, p. 203.

Western Central Asia and the Chinese border, was not homogeneous. This can be seen from the physical appearance of the people buried in the Pazyryk Barrows and from data pointing to the markedly Mongoloid features of skulls in Saka burials of the 6th-7th century BC in territories near the Aral Sea and also from the presence of Mongoloid features in the population of Northern Bactria in the last centuries BC and the first centuries AD as visible in anthropomorphic depictions from the territory of Bactria-Tocharistan[232]. I failed to find any reliable depiction of a sheathed horse-tail on objects which can safely be attributed to the Hsiung-nu (Ordos, lands beyond Lake Baikal), so this was clearly not a Hsiung-nu practice (and this is one more argument in support of the view that the Orlat plates do not bear depictions of Hsiung-nu). Thus, the bearers of the tradition investigated here were either Tocharian-speaking (?) Yüeh-chihs[233], or some Iranian-speaking tribes known by the common name Saka. It is hard to give preference to any particular one of them. For the present it is impossible to prove that the Pazyryk Barrows belonged to the Yüeh-chih, but the existence of tail-cover depictions in Kushan materials could indicate such a line of succession. On the other hand, Indo-Scythian coins show that this practice was customary for Sakas. It is hard to say to what extent the events of the 2nd century BC (when the Yüeh-chih forced some of the Saka tribes to move south, which in its turn led to the fall of the Graeco-Bactrian Kingdom) furthered the adoption of such practices. Most likely this borrowing took place during the previous period of interaction between the nomadic cultures in the eastern part of the area inhabited by Eurasian nomads. So we can now call this practice a "Saka-Yüeh-chih custom" or, bearing in mind its absence from European Scythia and appearance in Europe only in the 1st century AD (with Alanians?), a "Yüeh-chih custom". It is to be hoped that future discoveries and investigations will enable us to arrive at a more precise definition.

[232] Rudenko, 1953, pp. 62-69; Yablonsky, 1996, 6, p. 50; Idem, 1999, p. 46; Khodzhayov, 1980, pp. 102-103, 108; Ilyasov, Mkrtychev, 1992, pp. 118-119; Abdullaev, 2000, pp. 149-155. Apparently, the linguistic situation was also mixed and some Turco-Mongolian tribes, as well as Iranian ones, made up part of the Yüeh-chih confederation at the height of its power (Bunker, 1993, pp. 111-112).

[233] Pulleyblank, 1966, pp. 9-39. According to his opinion Ta-yüan, K'ang-chü and Wu-sun were Tokharian, i.e. Indo-European speaking peoples, too (Ibid., pp. 22-29, 36). L. Torday have identified Ta-yüan with Thakhuar, K'ang-chü and Kushan with Asioi/Asiani, Yüeh-chih with Iatioi of Ptolemy; in his opinion, Yüeh-chih = Tochari identification is wrong, see: Torday, 1997, pp. 160-161, 296-298, 308, 389-390, 394, 400-433.

In conclusion I would merely note that the crenelated mane and scabbard slide, as well as covered tails and flying tassels are seemingly insignificant elements of equipment, but their widespread use reflects the enormous influence and creativeness of Asian nomads, whose achievements included more than the ability to destroy kingdoms and establish empires by force of arms.

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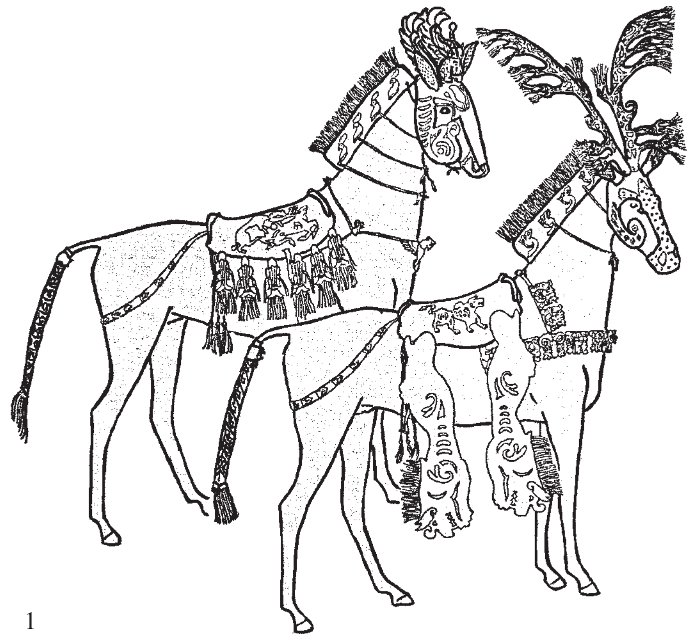
Abbreviations

AA:	Arts Asiatiques. Paris.
ArA:	Artibus Asiae.
ACSS:	Ancient Civilizations from Scythia to Siberia. An International Journal of Comparative Studies in History and Archaeology. Leiden.
AIO:	Archaeologia Iranica et Orientalis. Miscellanea in honorem Louis Vanden Berghe. Gent.
AMI:	Archaeologische Mitteilungen aus Iran. Berlin.
AMIT:	Archaeologische Mitteilungen aus Iran und Turan. Berlin.
BAI:	Bulletin of the Asia Institute.
CAJ:	Central Asiatic Journal
DD:	Donskie drevnosti. Azov.
EKNDT:	Evrazia: kulturnoe nasledie drevnikh tsivilizatsii. Vyp. 2. Gorizonty Evrazii. Novosibirsk
EO:	Etnograficheskoe obozrenie. Moskva.
FE:	Foundations of Empire: Archaeology and Art of the Eurasian Steppes (The Nomad Trilogy, vol. 3). Los Angeles.
IA:	Iranica Antiqua. Gent.
ID:	Iranische Denkmäler. Berlin.
IGISC:	Indo-Greek and Indo-Scythian Coinage. London.
IHMC:	Institute of the History of Material Culture, Sankt-Petersburg.
IMKU:	Istoriya materialnoy kultury Uzbekistana.

INK:	Istoriya naroda khunnu. In 2 vols. (Sochineniya L.N. Gumiliova. V. 9). Moskva.
NTA:	Numizmatika Tsentralnoi Azii. Tashkent.
RA:	Rossiyskaya arkheologiya. Moskva.
SA:	Sovetskaya arkheologiya. Moskva.
SE:	Sovetskaya etnografiya. Moskva.
SEDS:	Severnaya Evraziya ot drevnosti do srednevekovya. Tezisy dokladov konferentsii v chest 90-letiya M.P. Griaznova. Sankt-Petersburg.
SI:	Studia Iranica
SMOA:	State Museum of Oriental Art, Moscow.
SNHA:	Source: Notes in the History of Art. New York.
SRAA:	Silk Road Art and Archaeology. Kamakura.
TA:	Tsentralnaya Azia. Novye pamiatniki pismennosti i iskusstva. Moskva.
VDI:	Vestnik drevnei istorii. Moskva.
WW:	Wen wu (Cultural Relics). Beijing.



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Pl. I. 1. Decorated horses, 1st Pazyryk Barrow (after M.P. Griaznov); 2. Horseman, felt carpet from 5th Pazyryk Barrow (after S.I. Rudenko).

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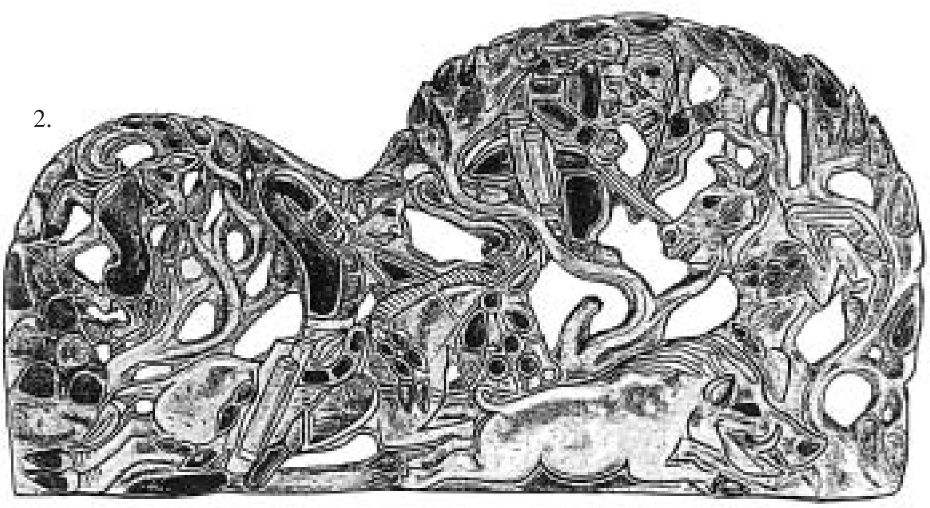
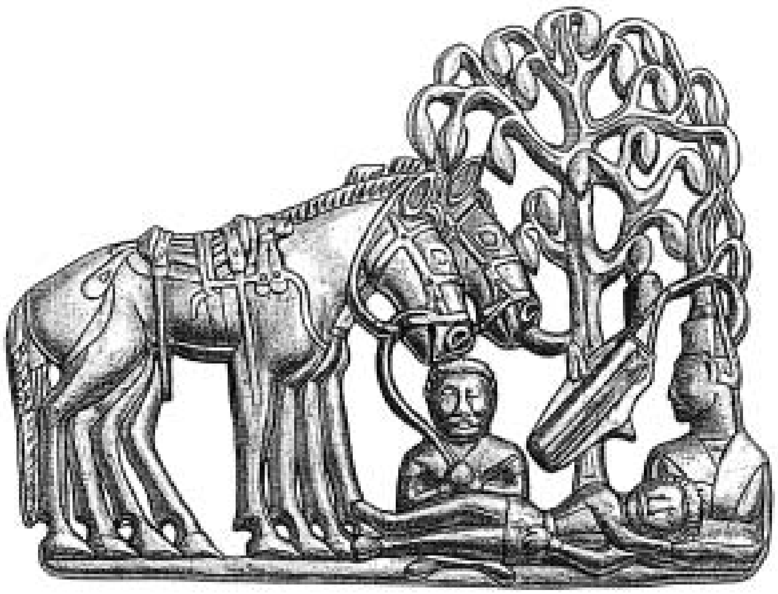


Pl. II. 1., 2. Golden belt buckles, Siberian collection of Peter the Great (author's drawings after photograph).



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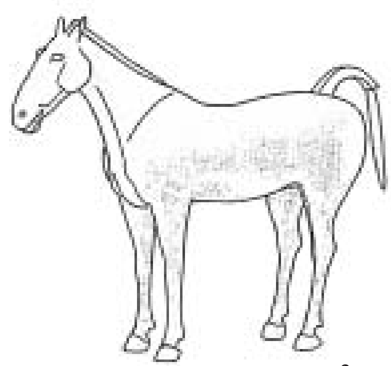

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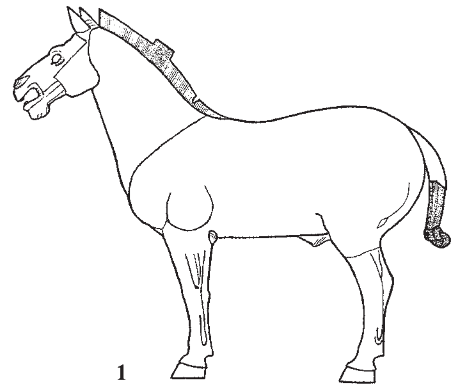
Pl. III. 1. Golden belt buckle, Siberian collection of Peter the Great; 2. Golden belt buckle, Saksonokhur; 3. Bronze horse sculpture, Maoling. (1-3 — author’s drawings after photograph)



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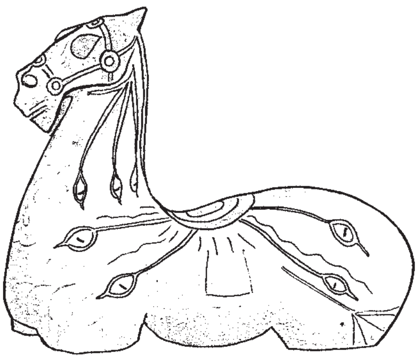

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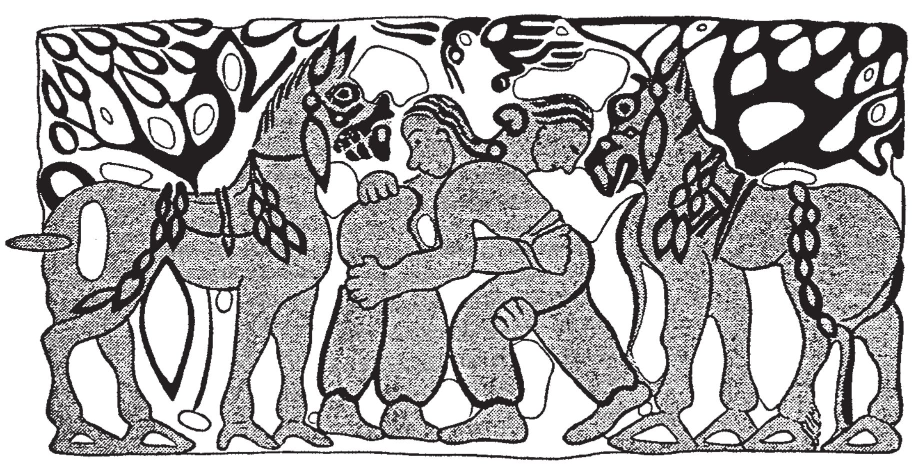

Pl. IV. 1. Terracotta horse, burial complex of Qin Shihuangdi (after Wenwu, 1, 1991); 2. Terracotta horse, Han burial (author's drawing after photograph); 3. Bronze belt buckle, Ordos (after H. von Gall).

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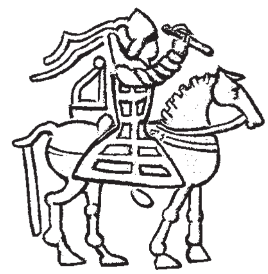

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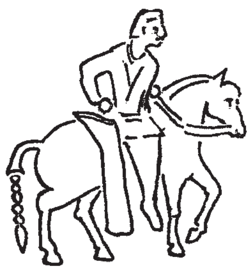

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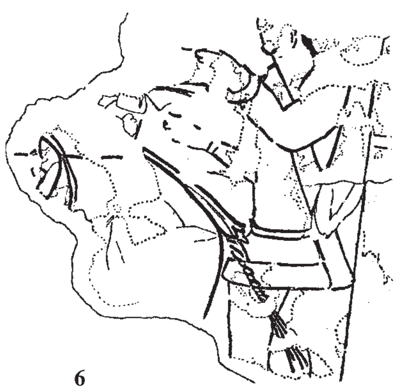

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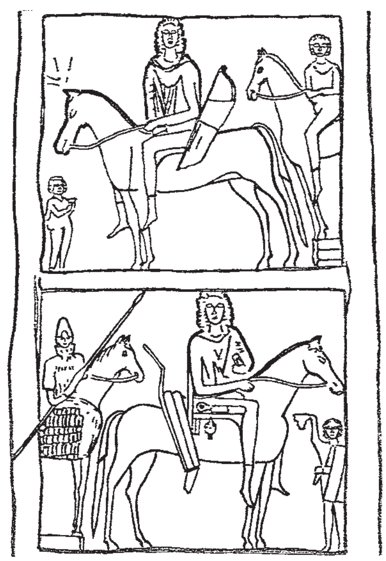

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Pl. V. 1. Rider on Hippostratus' coin; 2. Azes I (after J. Rosenfield); 3. Azes II; 4. Heraus; 5. Artabanus II (after J. De Morgan); 6. Wall painting, Dalvarzintepa (after G.A. Pugachenkova); 7. Tomb relief of Athenios, Panthikapeia (after Yu.M. Desyatchikov). (1, 3, 4 - author's drawings after photograph)

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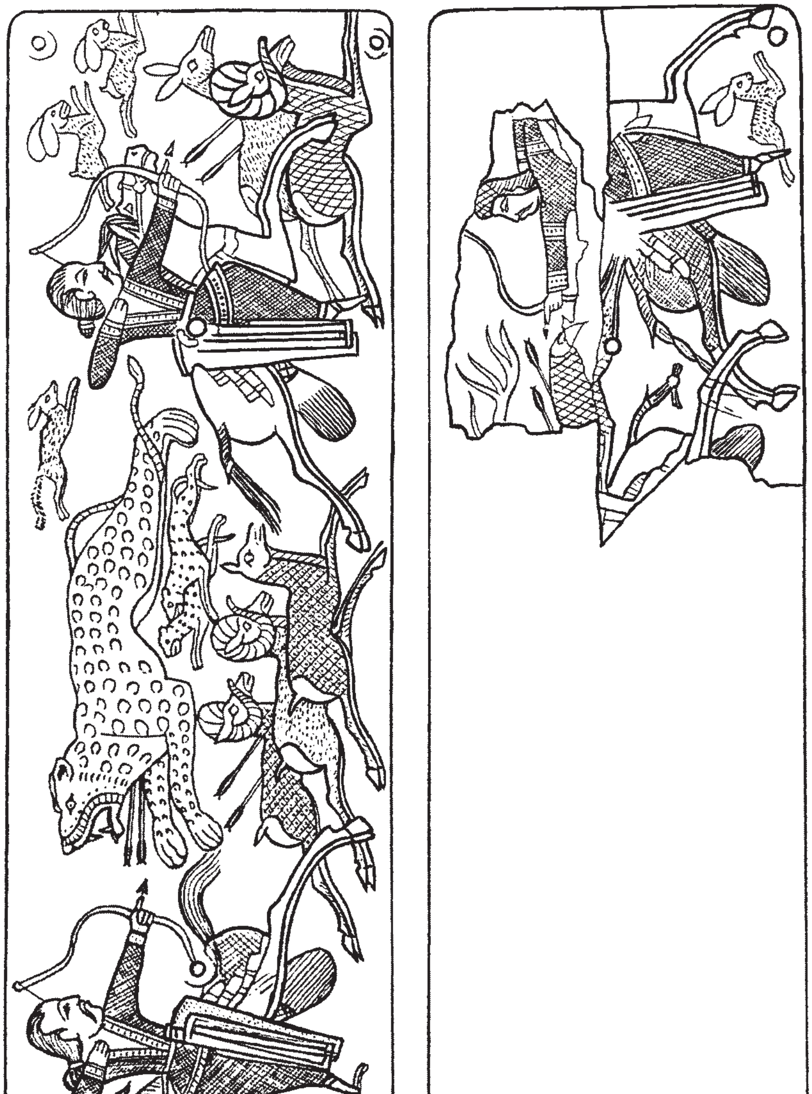
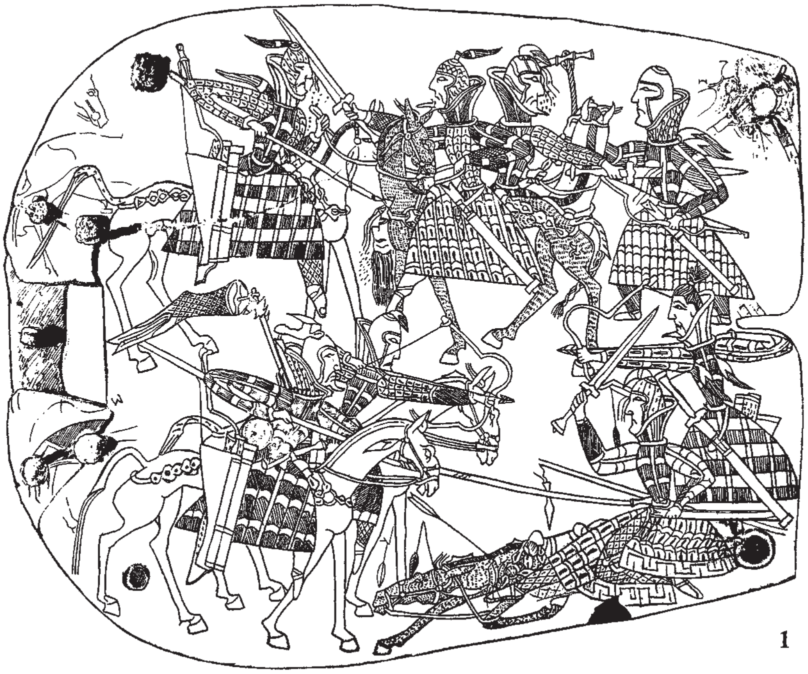


Pl. VI. 1., 2. Takht-i Sangin (after B.A. Litvinsky, with some corrections).



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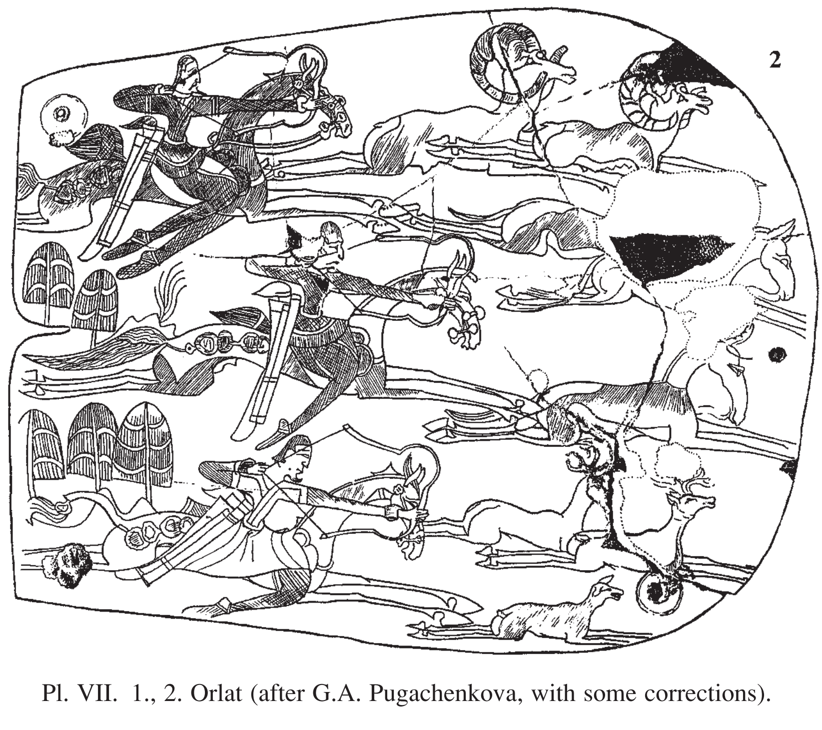
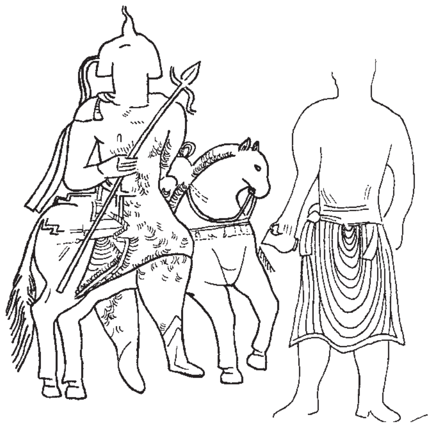


Pl. VII. 1., 2. Orlat (after G.A. Pugachenkova, with some corrections).



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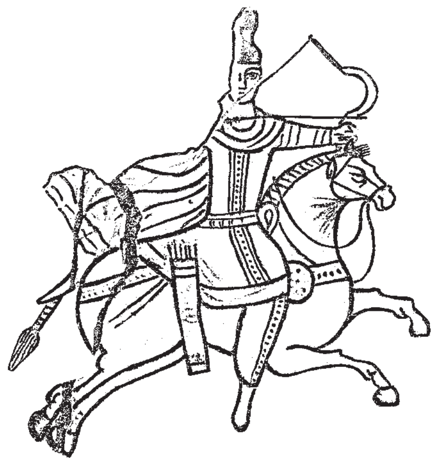

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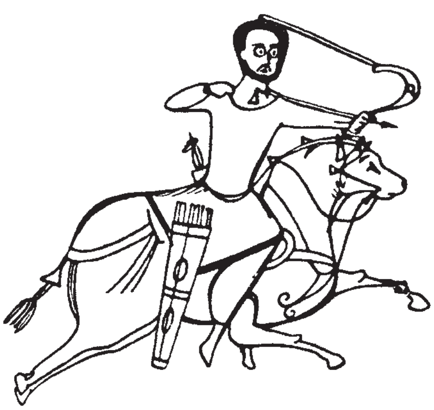

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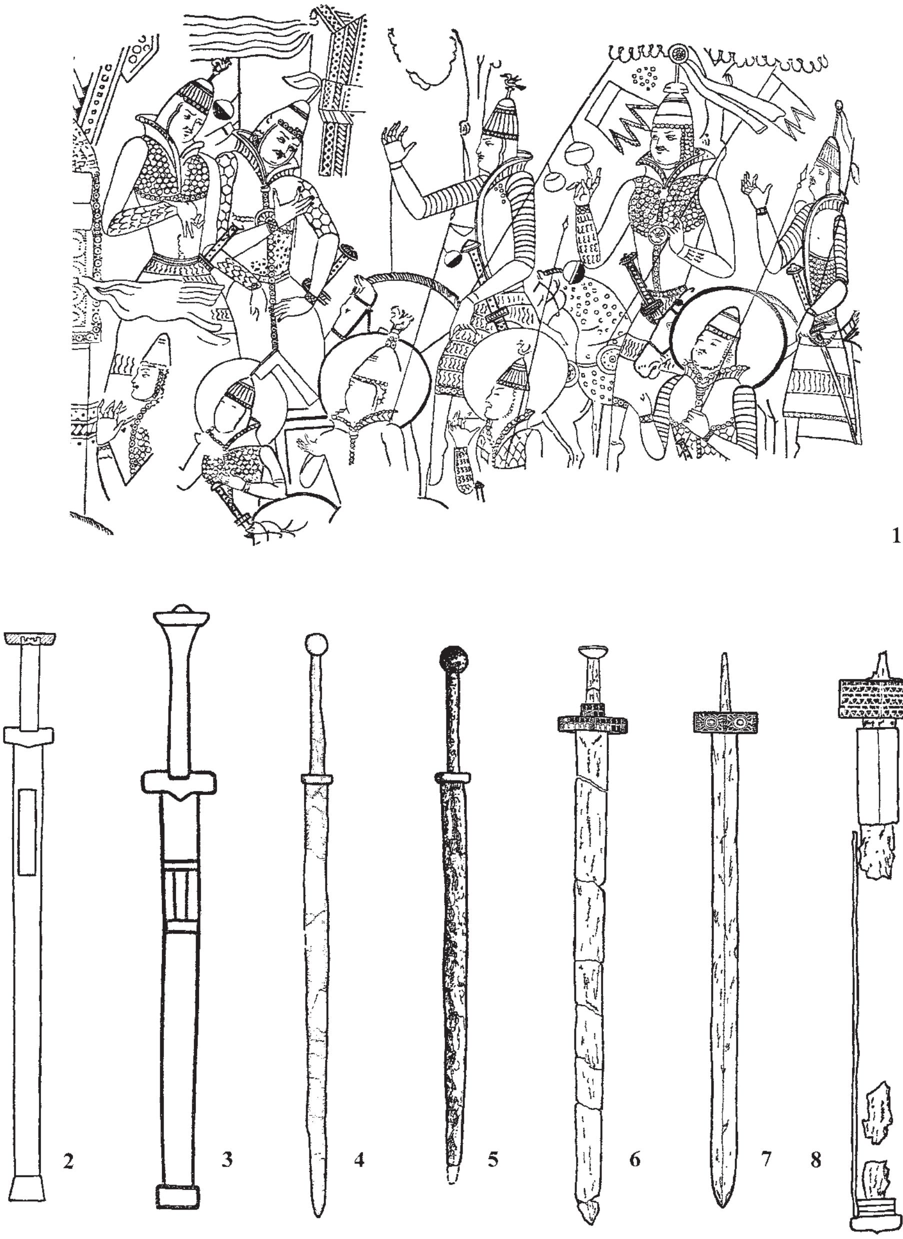
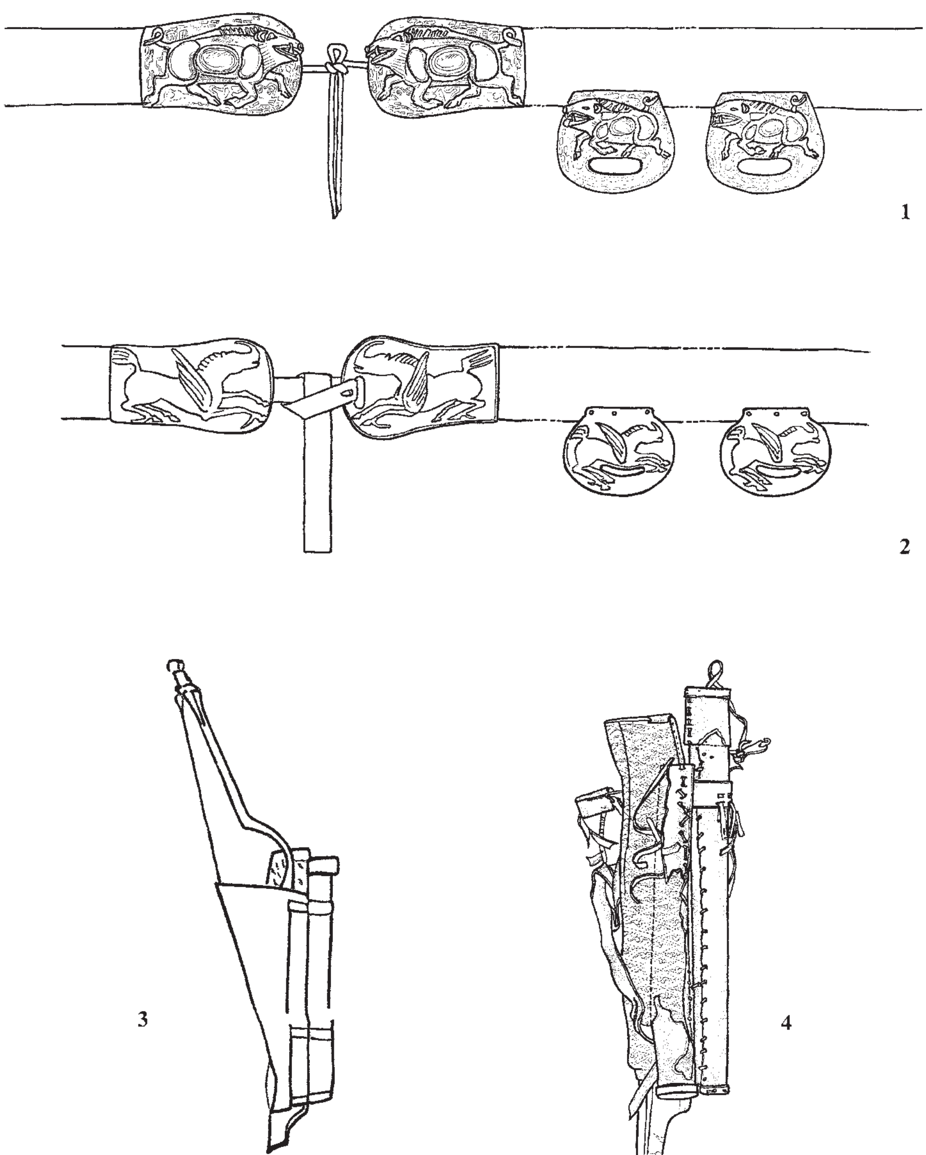
Pl. VIII. 1. Hung-e Kamalwand (after L. Vanden Berghe); 2.-4. Dura-Europos (after M.I. Rostovtzeff and B. Goldman).



Pl. IX. 1. "Cave of the Painter", Kyzyl (after A. von Le Coq); 2. Han sword (after Xia Nai); 3. Sword depiction from Orlat; 4. Sword from Achamaili (after K. Alimov, G. Bogomolov); 5. Sword from Agalyksai (after O.V. Obelchenko); 6. Sword from Dmytrivka; 7. Sword from Lermontovskaia Skala; 8. Sword from Altußheim. (6-8 – after Ia. Lebedynsky).



Pl. X. 1., 2. Reconstruction of belts (after Sun Ji); 3. Gorytus depiction from Orlat; 4. Gorytus from Niya (after Wenwu, 1, 2000).

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THE MISSING ANCIENT LAKE OF SAVEH A HISTORICAL REVIEW

BY

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In some historical, geographical, and poetic Persian texts there is a very interesting quotation about the former existence and sudden disappearance of a lake in Saveh which is now a small city situated about halfway between Tehran and Hamadān. In this article, these texts are briefly reviewed and their contents are contrasted with present and historical geography of Saveh region, in order to verify the validity of the story of the Lake of Saveh. This comparison in addition to the study of the etymology of some geographical names, archaeological remains and recent geological findings demonstrate that the Lake of Saveh had really existed in Zarand area, a vast plain in the north of Saveh. The probable causes of drying out of Saveh Lake are also overviewed in the present article.

Historical Review:

The story of the Lake of Saveh has been narrated in two different ways. Some texts hold that the Lake existed long before Islam and was artificially dried out by a legendary king of Persia a few thousand years ago. However, others state the Lake did not disappear until the birth of the Prophet Muhammad, an event believed to be a miracle by many authors.

In his Tārīx-i Qum meaning "The History of Qum", Muhammad ibn-i Hassan Qumi (378 H.Q.)[1] has written the story of the drying out of a lake by a Persian king in Saveh area. Here is the summary of the story:

[1] 378 H.Q. (Hidjrī Qamarī) i.e. 378 lunar years after the emmigration of the Prophet Muhammad from Mecca to Medina.

Seyāvush, the Kaixusru's father was killed by Afrāseyāb in a battle between Persia and Tūrān. Kaixusru[2] who was then the King of Persia, left Ecbatāna (Hamadān) for Tūrān to take his revenge against Afrāseyāb. On his way between Ecbatāna and Rhagae (Rai), he noticed the lands of Saveh and Qum that were covered by a great lake. The King swore that he would make the land habitable and developed if God helped him to gain victory in the war. Gīv-ibn-i Gūdarz took the King's statement seriously and asked his son Bījan to find a way to discharge the Lake. Bījan who was highly talented with swimming skills, found a suitable site for draining the lake basin. He stayed there and supervised the completion of the draining operation and then went to join Kaixusru's army but he told nothing –even a word- until the King returned from his conquest in Tūrān. The King was astonished at the sight of the dried out lake and expressed his profound surprise over the incident.

"Do you recall your oath before God about this land?" Exclaimed Gīv-ibn-i Gūdarz. "When I heard your prayer, I ordered my son to discharge the Lake to assure of receiving God's assistance!" Continued Gīv-ibn-i Gūdarz.

The King was pleased and so Saveh was founded on the dried out ground of the Lake of Saveh.

The author of Xulāsat ul-Buldān, Muhammad-Hāshim Hossainī Qumī (1079 H.Q.) has mentioned:

"And at first, there was a lake in place of Āveh in which water accumulated during the spring and could not outflow. One of the Persian kings made an outlet to discharge the lake and so he founded the town of Āveh."

Āveh is presently a small town with many prehistorical to Islamic archaeological remains situated 25 km south of Saveh. Native people of some other parts of central Iran (e.g. in Gulpāygān) also narrate a comparable story about their own lands.

There is an alternative frequently-mentioned and consistent statement about the Lake of Saveh asserting a miraculous event for drying up of the Lake of Saveh. According to many historical and geographical texts both in Arabic and Persian, at the night of the birth of the Prophet Muhammad,

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[2] Kaixusru, the son of Seyāvush, is the fourth king of the legendary Keyāniān dynasty. He is well-known for his piety, magnanimity and justice. Detailed biography of Kaixusru, Seyāvush, and Afrāseyāb is narrated in Shāh-nāma of Fīrdawsī.

a series of miraculous events occured simultaneously in the land of Persia; the fire-temple of Pārs stopped burning, the columns of the Vault of Xusru — the major royal palace of Sassanian kings — collapsed and the Lake of Saveh suddenly disappeared.

In "The Lands of the Eastern Caliphate", G. Le Strange (1930) mentions:

"In Moslem legend Savah was famous for the great lake which had been here before the days of Islam, and which had suddenly dried up on the night of the birth of the prophet Muhammad; the water sinking down into the earth in joy at the good news, as Mustawfi writes."

This statement is based on the works of Hamd ul-lāh Mustawfī, the famous Persian geographer and historian (d. 750 H.Q.).

Since the third century H.Q. onwards, the above quotation has repeatedly appeared in Persian texts. Some major books in which this quotation can be found are listed below:

- Tārīx ur-Rusul-i va al-Mulūk of Muhammad-ibn-i Djarīr-i Tabarī (260 H.Q.)
- Tārīx-i Ya'qūbī of Ahmad-ibn-i Abī Ya'qūb (3th century H.Q.)
- Mudjmal ut-Tawarīx-i va al-Qisas of an anonymous writer of 6th century H.Q.
- Fārsnāma of Ibn ul-Balxī (7th century H.Q.)
- Tārīx-i Guzīda (730 H.Q.) and Nuzhat ul-Qulūb of (740 H.Q.) of Hamd ul-lāh Mustawfī Qazvīnī
- Āthār ul-Bilād va Axbār ul-I'bād of Zakareyā ibn-i Mahmūd Qazvīnī (7th century H.Q.)

Among these references, a paragraph in Mudjmal ut-Tawārīx-i va al-Qisas is translated here. This story has been similarly recounted in other texts.

"… And the night therein he was born[3], all the idols on the earth were dropped to the ground and the columns of the Vault of Xusru collapsed down due to shaking and someone quotes that he[4] saw it in a dream. And this seems more reasonable. And the prime priest dreamed that few lean Arabian camels defeated the numerable fatty ones and banished them from

[3] Prophet Muhammad
[4] The prime priest

the banks of Tigris into the land of Iran, and at the same night the fire was extinguished in the fire-temple of Pārs, and it had been kept alive for a thousand years. And the water (of) the Lake of Saveh dried up. In the next day, Xusru was fearful of likely collapse of the Vault. Thus he called the noblemen and wisemen before himself and began his words: "What is happening?". And the prime priest narrated his dream (and said): "I'm afraid of uttering my words before the King!". Then he began to narrate his dream and at the moment, the news were brought that the Fire was extinguished and that the Lake of Saveh disappeared. The King trembled and commanded…."

This story has also been mentioned by Mustawfī Qazvīnī. He states that the Lake of Saveh had been situated in place of the town of Saveh and fed by Mazduqān-Chāy, the long river passing in south part of Saveh[5].

Zakareyā Qazvīnī (Āthār ul-Bilād va Akhbār ul-I'bād) steps forward to say that some old men of Saveh claim they had seen in their youth, ships and boats moving around the Lake. At the time of Zakareyā the dried ground of Saveh Lake adjacent to the town of Saveh were cultivated by barly.

Yazdī (Tarīx-i Yazd or "History of Yazd"), asserts the Lake had been extended through most parts of central Iran from Hamadān and Saveh to Yazd.

Some significant questions come to mind when a plenty of the above-mentioned statements are encountered through the Persian literature. Has a lake ever existed in the region of Saveh? If so, when and why did it disappear? Any frequently mentioned legend about a place or a natural phenomenon has most probably stemmed from a reality. The story of the Lake of Saveh has to be treated likewise, considering the remarkable number of related citations in Persian texts. Assuming the former existence of the Lake of Saveh, the time of foundation of the town of Saveh is of critical importance for choosing one of the two above quotations. Moreover, the etymology of geographical names also appears to be very significant in locating the probable site of the Lake of Saveh.

Settling time of Saveh

Many evidences can be gathered together to deduce the settling time of Saveh region and foundation time of the town of Saveh. Marco Polo

[5] Nuzhat ul-Qulūb of Hamd ul-lāh Mustawfī Qazvīnī (740 H.Q.)

believes that Saveh is the birthplace of the Magi who brought gifts to the baby Jesus:

"In Persia is the city called Saveh, from which the three Magi set out when they came to worship Jesus Christ….One was named Beltasar, the second Gaspar, and the third Melchior."

The author of the "Travels of Marco Polo" also tells about a place called Qala Ātash-parastān meaning "the castle of fire-worshipers" near Saveh. The persistence of a Zoroastrian fire-temple near Saveh up to the time of Marco Polo probably proves the pre-Islamic settlement of the area at the period of the Parthian or Sassanian dynasties.

In his "Zur historische Topographie von Persien", Tomaschek connects the name of Saveh to "Sevavicina" or "Sevakina" which are written in the "Tabulae Peutingerianae" or Peutinger Table[6].

To above, should be added the authors' findings of stone tools in Zarand area probably belonging to the Neolithic (Fig. 2) and many other archaeological sites of pre-Islamic times all over the region of Saveh (Mukhtari, 1999). All these evidences can attest to a pre-Islamic foundation of the town of Saveh and settlement of the whole region far before Islam.

Etymology of some geographical names

Etymology of the geographical names can yield some valuable information about the origin and history of certain places. As an interesting example, one can cite the case of Mexico City. The name has been derived from the Aztec words "mexliapan + xitli" meaning "city in the centre of the lake of the moon". Presently, the city itself is located on a dry land. However, since the time of occupation of the valley of Mexico by Aztec Indians in 1221 A.D., the area has gradually undergone a transition from a lake-marsh environment to a completely dry and urbanized area. The name has well remained a good indication of the original condition of Mexico City[7].

Etymology of some geographical names in the region of Saveh turned out to be fruitful in finding the probable site of the lost lake of Saveh.

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[6] See The Encyclopaedia of Islam edited by C.E. Bosworth *et al.* (1995), Volume VIII: pp. 85.

[7] See the Encyclopaedia Britannica under Mexico City.

According to the native people of Saveh, the name has been originally "Seh Ābeh" meaning "three waters". These waters each had formed parts of a very large lake in central Iran. The Lake of Saveh had been one part which disappeared by the time of the birth of the Prophet Muhammad. Houz-i Sultān (SW of Tehran) and Daryācheh-i Namak (NE of Kāshān) are presently two salt lakes believed to be the remnants of that quite vast lake.

Besides being an old town in Iran, Saveh has been mentioned in two other meanings; one is the name of a mythical character in Shāhnāma who was killed by Rustam and the other one is the *gold debris*[8]. Tomaschek relates the name of Saveh to the Avestan word "sava", Pahlavī "savaka" meaning "advantage" and "utility"[9].

Water has permanently been of critical value and especial respect in Iran. This is the case because central Iran has an arid to semi-arid climate with a very little precipitation. The invention of the "qanat" system was a useful way to supply the irrigation water in the dry lands of Iran.

In such a condition it would not be so exciting that a lot of the geographical names derived from the words denoting water. Very specific among these names is with no doubt "Zarand". It is the abbreviation of the Pahlavi[10] word "Zarāvand" or "Zaryāvand". "Zarā" or "Zaryā" signifies "lake" and/or "sea" while the suffix "vand" means "the site". So, as a whole "Zarand" implies "the place of lake or sea" (Afshar-i Sistani, 1999). As is illustrated in Fig. 1, Zarand is a vast plain 30 kms north of Saveh. No specific town or village exists there bearing the name of Zarand and the origin of the name has still remained mysterious[11].

"Zavyeh" is a small town located in the north-central part of Zarand plain. According to Afshar-i Sistani (1999) the name comes from the Pahlavi "Zāv" or "Zāb" meaning "a lot of water" or "river".

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8 See Luqatnāmeh of Dihkhodā.

9 See The Encyclopaedia of Islam edited by C.E. Bosworth *et al.* (1995), Volume VIII: pp. 85.

10 A form of Middle Persian a little different from the language spoken at the period of Sassanians.

11 Zarand has been the site of a lake-marsh environment during the Quaternary period. For the first time the authors have found the sediments of this recently dried out lake-marsh in a very large volume. Sediments containing lots of the indicators of a lake-marsh environment including some characteristic freshwater fossils as many gastropod, ostracod and algal fossils and sub-fossils and some typical sedimentary structures. The conclusions will be published in near future.

Verifying the story of the Lake of Saveh

The number of quotations about the Lake of Saveh in historical documents is plentiful suggesting the real existence of the Lake Saveh. Etymology of the geographical names helps to locate the possible site of the lost lake. According to some authors, the Lake of Saveh had originally been situated in place of the town of Saveh (e.g. Nuzhat ul-Qulūb and Āthar ul-Bilād va Akhbār ul-I'bād). A look at the topographic map of Saveh instantly reveals that there is no topographic trough in Saveh and the area slopes gently towards SE. Several pre-Islamic archaeological sites have been discovered ranging from the 5^{th} millennium B.C. onwards, all located in the altitudes lower than 1000m contour line which passes through Saveh (Fig. 3) (Mukhtari 1997). These evidences in addition to the pre-Islamic origin of Saveh — discussed earlier — effectively rule out the possibility that the Lake had been situated in or very close to Saveh.

Moreover, the presence of a lake covering such a vast area of Iran according to inhabitants' belief can not be correct regarding both the relatively rough topography and lack of the geological evidence of the former shorelines of such a huge imaginary lake.

In contrast, Zarand area is a much more probable site for emplacing a lake in the last thousands of years ago. It lies nearly 30 km north of Saveh and has a very gentle eastward slope in eastern parts where the authors have discovered geological evidence of a recently dried out lake/marsh environment. Etymologies of the names "Zarand" and "Zavyeh" are strong reasons for the relation of Zarand area to a lake or marsh in the past when the climatic conditions had been milder than today. The precipitation could have supplied more water to feed the Lake/Marsh of Saveh in the form of underground or surface waters. Such a situation could have been present in the eastern part of Zarand Plain (Fig. 4). The ground water is very near to surface so that its seepage onto the earth surface is quite envisageable. Distribution of archaeological sites shows that no pre-Islamic remain is situated within the center and east of the Zarand plain which can be a sign for the former occurence of a lake in this part with human remnants concentrating around it (Fig. 5).

As a conclusion, the Zarand area has the most potential of emplacing a lake in the region of Saveh and must be put under a more detailed study in near future (Fig.7 and 8).

The causes of disappearance of the Lake Saveh

Lakes are transient features on the Earth surface. They can appear as rapidly as they disappear. Natural phenomena such as landslides (earthquake-induced or not) and volcanic eruptions — by damming the river valleys- are the major lake-forming processes though earthquakes are rather destructive. Many recent examples of such constructive and destructive events can be presently cited in different parts of the world as well as some cases which appear in old texts.

In Quran, the catastrophic destruction of a natural or artificial dam has been mentioned in verse 34:16;

"But they gave no head. So We unloosed upon them the waters of dams and replaced their gardens by two others bearing bitter fruit, tamarisks, and a few nettle shrubs, Thus We punished them for their ingratitude; for We punish none save the ungrateful."[12]

In Haft-Kishvar or Suvar ul-Aqālīm of an anonymous writer (9th century H.Q.) there is a story about the earlier existence of a lake in the region of Kirman. An earthquake causes the lake to be deprived of receiving water as the course of the major feeding river "Kāseh-rūd" changes.

In "The History of Persian Earthquakes", Ambrasseys and Melvile enumerate the catastrophic historical earthquakes recorded in Persian texts. They do not deny the probable occurrence of an earthquake causing the drying out of a lake in Saveh. Fig.6A illustrates frequency versus time of the historical Persian earthquakes based on data in Ambrasseys and Melvile (1982). Even a glance at the graph will soon reveal a close correlation between the time of the new and full moons with the highest occurrence of earthquakes. Such a relationship which also has already been demonstrated by other authors (Burton, 1986) shows that at the beginning, middle and end of lunar months when the gravitational forces of the Sun and the Moon on Earth culminate, earthquakes take place most frequently. Fig. 6B further illustrates that more earthquakes in Iran take place at middays and midnights (Djamali, 1998).

According to different Islamic texts the Prophet Muhammad was born at a midnight between 12 to 17 of the Rabī' ul-Awwal, the third month of an Arabic lunar year. This time nearly lies within the above-mentioned time-range.

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[12] The Koran, translated by N.J. Dawood (1978). Penguin Classics. P.183.

Three causes can be responsible for drying out of the Lake of Saveh.

A) Gradual climatic changes

B) Sudden geological phenomena

C) Artificial drainage

Climatic amelioration has already been proved by some palaeoenvironmental studies in Iran. Like Europe the precipitation has been conspicuously increased after the last glacial period. Such a condition is evident by the maximum expansion of oak forest in Zagros Mountains towards the Mid-Holocene (5200 years ago) (Van Zeist, 1967; Van Zeist and Bottema, 1977). This may had caused the formation or re-expansion of the Lake/Marsh of Saveh at the time. A climatic change with a drying trend may then have happened in central Iran giving rise to a gradual retreat thereby contraction of the Lake/Marsh of Saveh. That this increasing climatic dryness led to a complete desiccation of the lake is not yet certain. For the final contracted Lake/Marsh of Saveh, a catastrophic or an anthropogenic event can both be envisaged. Artificial drainage of the lake for land reclamation or other purposes may also have been performed in ancient times. However one can not ignore the high probability of the occurrence of a catastrophic earthquake resulting in the sudden drainage of the Lake of Saveh. Such a phenomenon could take place with more probability in the middle of lunar months which coincides with the birth time of the Prophet Muhammad. There seems to be no scientific conflict between the co-occurrence of two events.

A multidisciplinary approach in the future may shed more light on the problem of the missing lake of Saveh. Such an approach will be worthwhile when the geological, archaeological and geographical information are studied in relation to the historical and etymological corpus. It will show us to what extent the old Persian texts are reliable and pave way to the future scientific approach to historical problems. While the emphasis here was more placed on the history and etymology, it provides a firm basis for a systematic study in other fields notably geology and archaeology which are now linking together as a new branch of geoarchaeology.

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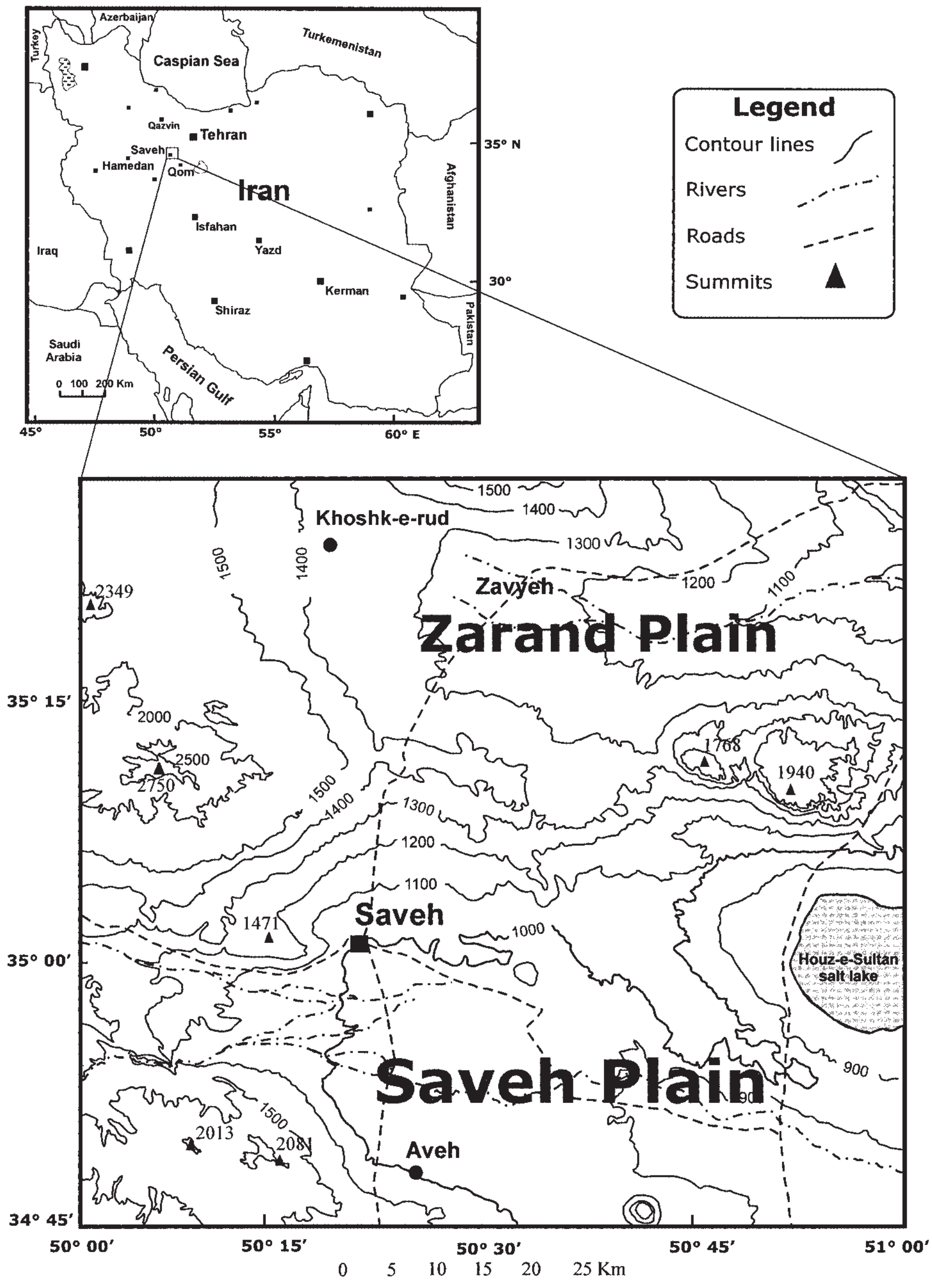


Fig. 1. Topographic map of Saveh region.

Fig. 2. Neolithic (?) stone tools found on tophills of lake-marsh sediments in the west of Zavyeh.

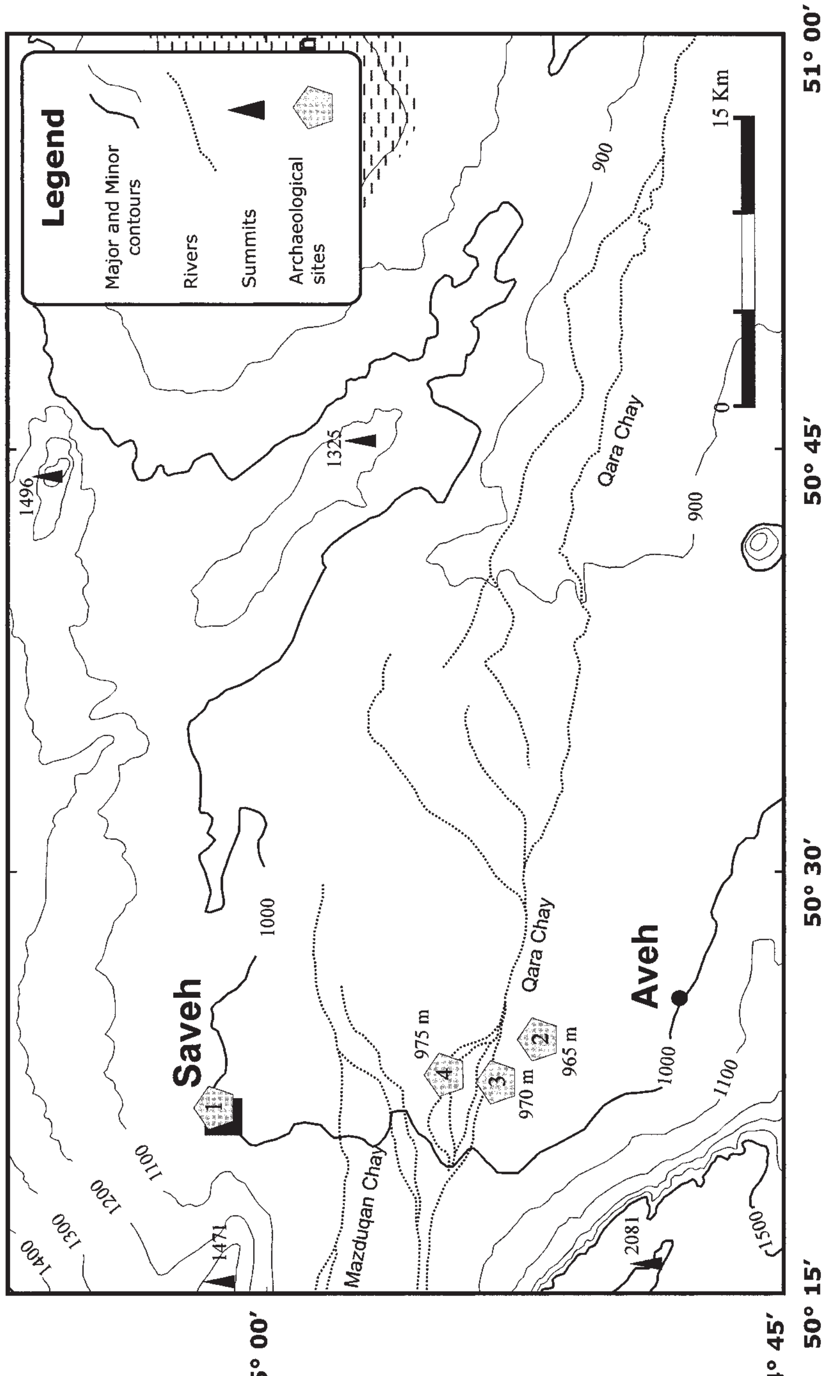


Fig. 3. Distribution of archaeological sites of the pre-islamic age. 1) Sassanian 2) 4th. to 1st. millennia B.C. 3) 1st. millennium (B.C.)-Sassanian-Islamic 4) Sassanian-Islamic (Data from Mukhtari, 1997).

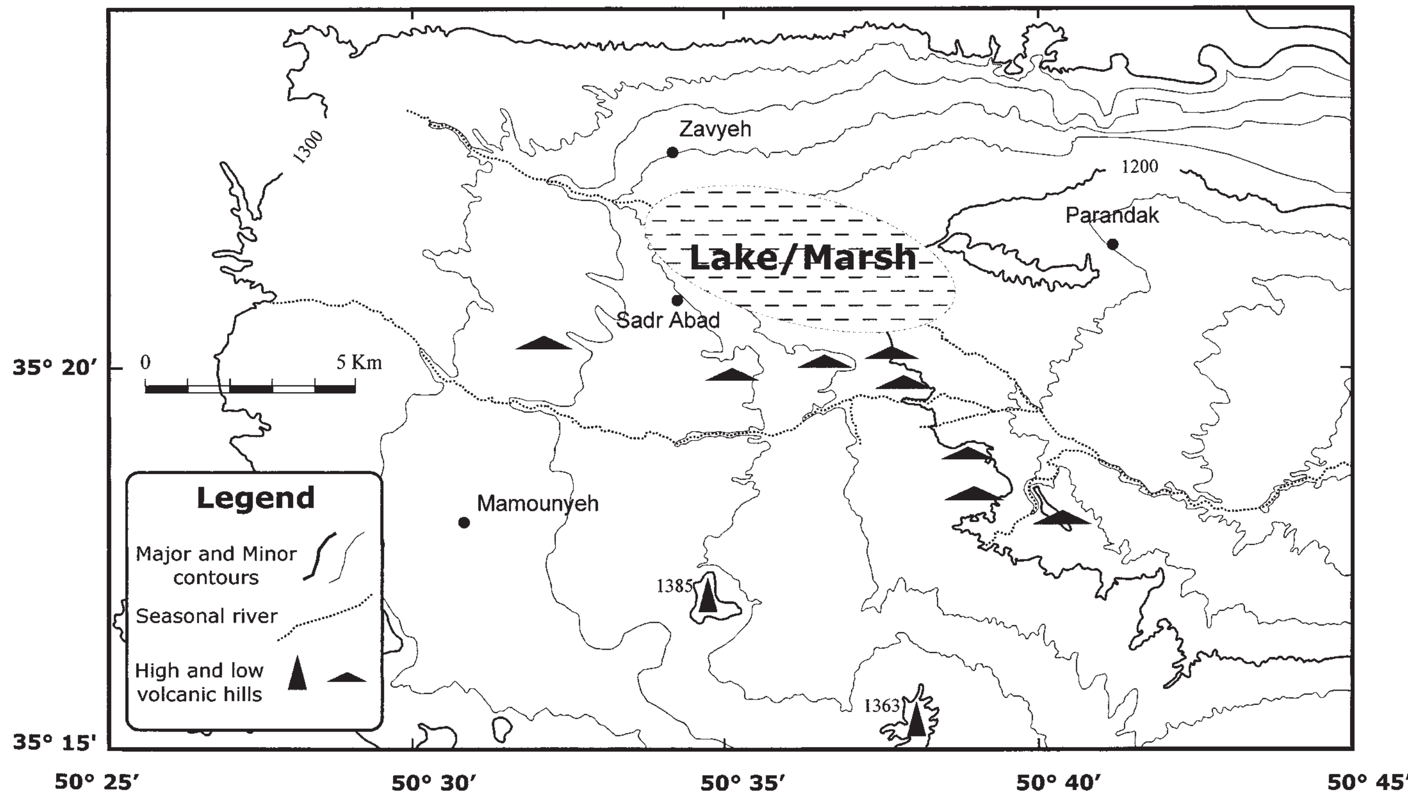


Fig. 4. The position of the Lake/Marsh of Saveh within the eastern part of Zarand Plain. The area has still near surface ground water and lies behind a hydrological outlet and has a high potential to emplace a lake/marsh system in a geographical and geological points of view.

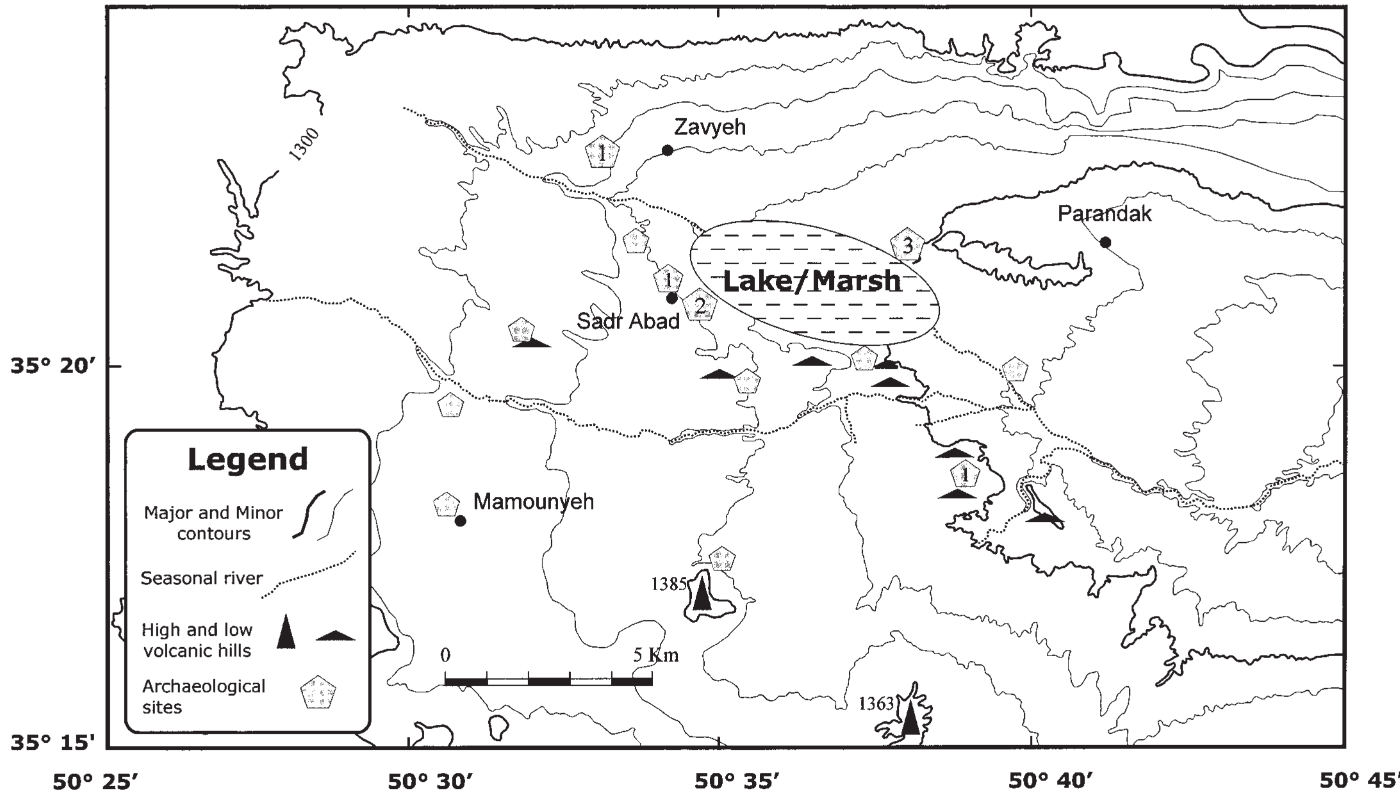
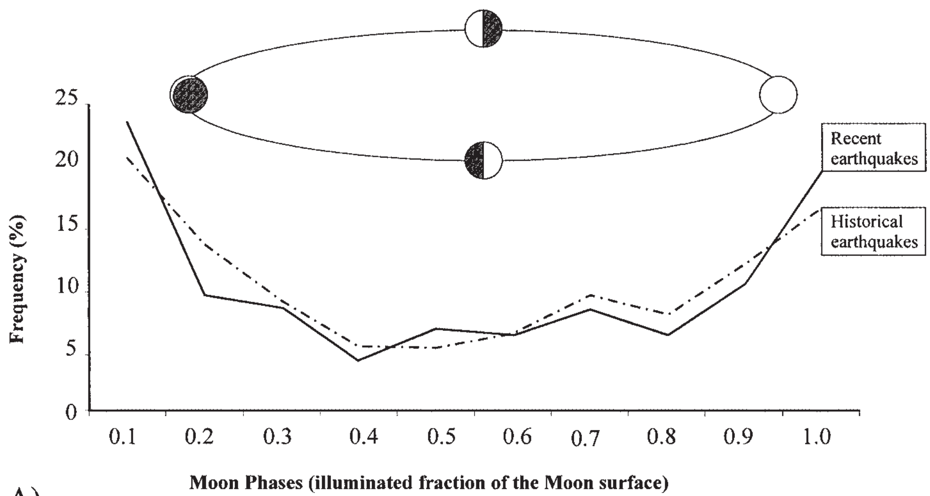
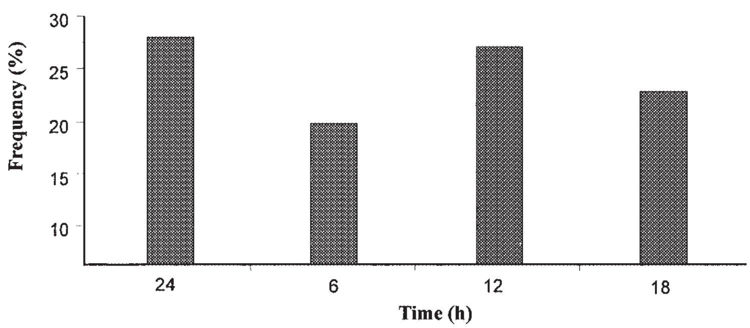


Fig. 5. Distribution of some archaeological sites in Zarand area. (1) Stone tools, (2) 5th millennium B.C. to Islamic sherds, (3) Sassanian ruins. Other sites with no number are of post-Islamic period. The Sassanian ruins observed just at the margin of the lake sediments in aerial photographs. No pre-Islamic site can be seen to be located in the position of the Lake/Marsh of Saveh (Data from Mukhtari, 1997).



A)



B)

Fig. 6. A) Relationship between the Moon phases and frequency of earthquakes. B) Correlation between maximum frequency with middays and midnights.

Fig. 7. Erosion of lake-marsh sediments in the west of Zavyeh has created this beautiful hilly and hillocky morphology in which a lot of stone tools have been found on tophills.

Fig. 8. An archaeological site in SE of Zarand plain. This place is located on the dried ground of lake-marsh limy-clayey sediments which are a very suitable raw material for making bricks and potteries. The volcanic hill in the front of the picture had probably formed an island within the Lake-marsh of Saveh.